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THE EDUCATIONAL STATUS OF CHILDREN DURING THE FIRST SCHOOL YEAR FOLLOWING FOUR YEARS OF LITTLE OR NO SCHOOLING.

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*EDUCATIONALLY DISADVANTAGED, *NEGRO YOUTH, *ACHIEVEMENT GAINS, *EDUCATIONAL STATUS COMPARISON, *SCHOOL CLOSING, DISADVANTAGED YOUTH, EDUCATIONAL ATTITUDES, OCCUPATIONAL CHOICE, ASPIRATION, SCHOOL ATTITUDES, INTELLECTUAL DEVELOPMENT, SELF-CONCEPTS, SCHOOL BOYCOTTS, PRINCE EDWARD COUNTY, VIRGINIA, EAST LANSING, MICHIGAN

FOLLOWING A 4-YEAR CLOSURE PERIOD, STANDARD COGNITIVE AND NONCOGNITIVE MEASURES WERE OBTAINED ON A SIGNIFICANTLY LARGE GROUP OF NEGRO CHILDREN BEFORE AND AFTER AN 18-MONTH PERIOD OF RESUMED FORMAL SCHOOLING IN PRINCE EDWARD COUNTY, VIRGINIA. SAMPLES OF STUDENTS COMPLETING SOME FORMAL EDUCATION DURING THE CLOSURE PERIOD AND OTHERS HAVING NO EDUCATION DURING THIS PERIOD WERE USED TO DETERMINE THE VARIABLE IMPACT OF RESUMED FORMAL SCHOOLING ON THEIR INTELLECTUAL DEVELOPMENT, ACHIEVEMENT LEVELS, ASPIRATIONS, SELF-CONCEPT, AND ATTITUDES TOWARD SCHOOL. DATA ANALYSIS SHOWED GENERAL IMPROVEMENT IN MEASURED INTELLIGENCE AMONG THE SUBJECTS AFTER FORMAL SCHOOLING WAS RESUMED. ONLY THOSE CHILDREN WHO WERE TOTALLY DEPRIVED OF FORMAL EDUCATION DURING THE PERIOD OF SCHOOL CLOSURE, HOWEVER, EXHIBITED SIGNIFICANT GAINS. RESULTS SHOWED, ALSO, THAT YOUNGER AGE GROUPS WERE CLOSER TO NATIONAL ACHIEVEMENT NORMS THAN THEIR OLDER COUNTERPARTS AFTER SCHOOLING RESUMED. ADDITIONALLY, IT WAS SHOWN THAT TOTALLY DEPRIVED STUDENTS MADE THE GREATEST POSITIVE CHANGE IN EDUCATIONAL AND OCCUPATIONAL ASPIRATIONS. THESE RESULTS AND OTHERS SUGGESTED THAT EDUCATIONAL DEFICIENCIES AMONG DISADVANTAGED GROUPS CAN POSSIBLY BE REVERSED IF SUFFICIENT RESOURCES, CURRICULUM INNOVATIONS, AND COMPETENT TEACHING ARE OBTAINED AND ADMINISTERED PROPERLY. (JH)

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Cooperative Research Project
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Robert L. Green
Louis J. Hofmann

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Chapter I

THE PROBLEM AND OBJECTIVES OF THE STUDY

The closing of the public schools in Prince Edward County, Virginia, in the spring of 1959 brought about one of the most unusual and debilitating events in the history of American public education (Green, Hofmann, Morse, Hayes, and Morgan, 1964). From the fall of 1959 until September of 1963 the County's white children attended a private segregated school while the majority of the Negro children in the County (approximately 1700) were without formal education. Through the efforts of the United States Department of Justice and six Virginia educators, a private school system known as the Prince Edward County Free School Association was opened which served the majority of the County's Negro children and six white children. During the period in which the Free School Association made available educational facilities for all of the County's children (September, 1963, to June, 1964, and the year thereafter), research data was collected in an effort to determine the general academic status of the children who had limited or no education during the interim period. Test data collected on the Prince Edward County Negro children during the summer of 1963 was available and used for comparative purposes (Green, et al., 1964). The data collected during the 1963-64 and 1964-65 school year regarding the academic status of the latter group will be reported herein.

Major Objectives of the Study

This study's general objective was to determine the effects of a short period of formal education on a sample of children previously deprived of that education. The extensive background information gathered by Green et al., 1964, on the educational status of the children at the end of their educational deprivation provided substantial comparison data for the post-education measures collected for this report. Specific orientations were focused on the degree of gains or lack of gains shown across age categories and degree of deprivation. Critical periods were investigated for a wide range of abilities.

Specifically:

I. Academic Aptitude
    A. Individual testing (Stanford-Binet)
    B. Group testing (Chicago Non-Verbal)

II. Academic Achievement
    A. Group testing (Stanford Achievement Test, Metropolitan Achievement Test, Gates Reading Test)
    B. Concept formation

III. Academic Attitudes, Self-Concepts, and Aspirations
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    C. Academic self-concept
    D. Crash educational program effects on self-concept of ability and educational and occupational aspirations

The closing of the public schools in Prince Edward County, Virginia, had a pronounced and measurable effect upon the measured intelligence and achievement of the Negro school-age population. The reintroduction of schooling during the 1963-64 school year provided a research opportunity to determine the immediate effects of short-term formal schooling upon this previously measured intelligence and academic achievement as well as academic attitudes, self-concepts, and aspirations.

Chapter II

RELATED RESEARCH

The related research section of the last recent report of the educational status of the Prince Edward County children (Green, _et al_., 1964) contained a review of that body of research focusing on the impact of the environment on school achievement, intelligence, and related cognitive factors. The studies were categorized into three sections: (1) intelligence and schooling, (2) achievement and schooling, and (3) cognitive deprivation. Following these, studies pertinent to the social effects of non-schooling such as aspiration levels, attitudes, values and morale were presented. The schematicized list of relevant variables stemming from these related studies are reproduced on the following pages of this report. Since the beginning of 1964, there has been a certain amount of additional research published in such valuable volumes as T. F. Pettigrew's _A Profile of the Negro American_ (1964). Rather than concentrating these additional studies here, they will be introduced into the body of the specific experimental sections where their discussion would be most relevant. For a more comprehensive overview of the whole area of related research, the full Related Research chapter of the 1964 report is recommended.

Intelligence and Schooling

The research cited indicated that an individual's intelligence in the school context was not independent of many aspects of that context, nor of several personal characteristics brought to the schooling situation, nor of certain aspects of the tests used to measure intelligence while in the educational context. Specifically, the variables can be schematicized as follows:

- I. Personal Characteristics
  - A. Age
  - B. Sex
  - C. Race
  - D. Motivation
- II. Context Characteristics
  - A. Immediate
    - 1. Socio-economic class
    - 2. Parental education and marital status
    - 3. Number of siblings
    - 4. Grade level
    - 5. Amount of prior education
  - B. General
    - 1. National stress (war versus peace)
    - 2. Population density (urban versus rural)
    - 3. Caste limits (degree of segregation)
    - 4. Cognitive deprivation
- III. Measurement Characteristics
  - A. Time emphasis (speeded versus non-speeded items)
  - B. Examiner (color and attitude)
  - C. Language emphasis (verbal versus non-verbal items)

Achievement and Schooling

Although intelligence is no longer considered to be a single general factor invariable for the individual, it still can be treated as a relatively stable set of aptitudinal limits. Between these limits fall the achievement levels elicited by specific tasks. Logically then, achievement should be sensitive to the same variables as intelligence. Past research shows this to be the case. Of the research cited, some referred to the same factors as for aptitude while others focused in unexpected directions. The variables can be schematized as follows:

- I. Personal Characteristics
    - A. Motivation
    - B. Health
    - C. Attention span
    - D. Verbal ability
    - E. Imagination
- II. Context Characteristics
    - A. Immediate
        - 1. Socio-economic class
        - 2. Home conditions
            - a. number of parents
            - b. number of siblings
            - c. parents' education
            - d. parents' emphasis on self-responsibility
            - e. degree of physical punishment
            - f. verbal environment
        - 3. School conditions
            - a. verbal facilities
            - b. remedial programs
    - B. General
        - 1. Caste limits (degree of segregation)
        - 2. Cognitive deprivation
- III. Measurement Characteristics
    - A. Time emphasis (speeded versus non-speeded items)
    - B. Examiner (color and attitude)
    - C. Language emphasis (verbal versus non-verbal items)

Cognitive Deprivation

The published papers touching on cognitive deprivation, while few in number, compensated for low frequency with richness in ideational quality. These contributions may be schematicized as follows:

I. Personal Characteristics
   - A. Emotional atmosphere
   - B. Teacher interest
   - C. Social deprivation and restrictions

II. Critical Age Period
   - A. I.Q. spread
   - B. Educational facilities for deprived children

III. Perceptual Deprivation Experiments in the Laboratory
   - A. Lack of cognitive deprivation
   - B. Importance of cognitive deprivation

The related research has generally specified the critical environmental variables which potentially influence achievement, intelligence, and cognitive factors of school-age children. However, most papers rest on either speculation or on restricted situation-specific experiments. The laboratory or the clinic have supplied well grounded but artificial data while papers stemming from field work generally offered important observations minus well grounded research. Researchers have applied sophisticated experimental techniques to peripheral, even trivial questions, while educators actually "in the field" have tackled important questions with unsophisticated experimental technique. The exceptions are rare but impressive (Pettigrew, 1964). One reason for this general failure is, of course, that children are not subject to the controlled laboratory manipulations of environment which infra-human species have undergone. One must investigate given situations occurring spontaneously in real life as they occur, and such large scale manipulations (in the United States) are far from frequent. The social

upheaval in Prince Edward County provided such a mass manipulation of the environment. The multiple tragedy of non-schooling for hundreds of children, if past published papers were any guide, would have serious negative effects on each child's achievement, attitudes, and even intelligence. It was clearly the responsibility and the opportunity for educational researchers to measure these deficits (Green _et al_., 1964) and any gains or changes resulting from the reintroduction of schooling (this report).

Chapter III

GENERAL PROCEDURE

Although specific procedures used will be delineated in the sections ahead as they occur, a few general comments might be made regarding procedure.

Experimental Design

Standardized cognitive and non-cognitive measures were made of the Negro children of Prince Edward County before (1963), during (1964), and after (1965) the resumption of public schooling which followed their extensive period of educational deprivation.

The educational dimensions of the last recent report (Green _et_ _al_., 1964) of the status of these children before school was resumed supplied the pre-education measures.

The two basic groups of interest were those children having no education whatsoever during the four-year period (1959-1963) in which the schools were closed (the NO EDUCATION group) as opposed to those children who received _some_ formal education during this period (the EDUCATION group). It should be noted that the latter group averaged only 1.5 years of such formal education for the four years of deprivation.

Population and Sample

Approximately 1700 Negro school children were initially left without public schooling in 1959. This was the basic population of interest, and it should be noted that this report refers only to the educational status of the Negro children. Although informal estimates of Caucasian children not receiving formal education during this period range as high as 300, these children were not available for testing purposes.

Naturally, many of the 1700 children left Prince Edward County, Virginia, permanently. Nevertheless, there were several hundred children in both the EDUCATION and NO EDUCATION group samples drawn for testing in 1963 (Green *et al.*, 1964) and an equivalent number was available for the 1964 and 1965 testings reported here. Samples were drawn randomly from this school-age population.

Instrumentation

Intelligence was tested by the Stanford-Binet Intelligence Scale (Form L-M) and the Chicago Non-Verbal Examination. Achievement was gauged by the Stanford Achievement Test (1953) and the Metropolitan Achievement Test (1959). In addition, questionnaires gauging educational and vocational aspirations and tests of concept formation were administered.

Data Collection Methods

Both group and individual testing (Stanford-Binet, L-M) was conducted at the senior high school and three elementary schools in the County. Graduate students in Education and Psychology from Michigan State University assisted in collecting the bulk of the data. In addition, trained school psychologists from the Detroit, Michigan, Public Schools and Michigan State University administered the individual intelligence tests.

Table 3-1

Tests Used in Prince Edward County Testing in 1964 and 1965

Test	Form	Year
Stanford-Binet Intelligence Scale	L-M	1960
Chicago Non-Verbal Examination		1940
Self-Concept of Ability Scale	MSU	1963
Metropolitan Achievement Test		1959
Stanford Achievement Test		1953
Educational Aspiration Form	MSU	1963
Occupational Aspiration Form	MSU	1963
Concept Formation Tests	MSU	1965

The achievement testing was completed during the month of May, 1964. Due to schedule conflicts, the intelligence data was not collected until early spring of 1965 providing a nine-month gap between the achievement and intelligence testing.

The conditions under which the youngsters were tested were quite favorable in contrast to the pre-education testing conditions of the summer of 1963 (Green et al., 1964). The pre-education testing was conducted in small rural church buildings throughout Prince Edward County and in the basement of a rented office building in the town of Farmville. Such problems as the limited size of the testing centers, combined with the oppressive heat, made testing circumstances other than ideal.

The data were collected within the confines of the school classroom with teachers serving as proctors and test aides. Due to the cooperation and assistance of these teachers and the administrative staff, the testing atmosphere facilitated good test-taking behavior on the part of the students.

It was noted during the collection of the 1963 data that many of the subjects exhibited behavior indicating that they were completely unfamiliar with the rudiments of test-taking procedures including the comprehension of verbal directions. Such difficulties as the inability to use a pencil appropriately or "coloring" when asked to "draw a frame" around a picture were no longer apparent after the one year of formal schooling.

Chapter IV

THE EFFECTS OF NON-SCHOOLING ON MEASURED INTELLIGENCE

It has been shown that educational conditions comprising essentially different environments tend to have a differential impact upon the development of intelligence. Lorge (1945) found that intelligence tested before and after a 20-year interval depended greatly on the amount of formal education received during the interim. Lorge asserted that not only is intelligence related to schooling, but it is contingent upon its continuation. deGroot (1948), in assessing the effects of poor school conditions during World War II upon intelligence test scores, found that I.Q.'s of successive entrance classes at a boys' training school in Holland dropped steadily. This drop was interpreted as being related to the influence of the war as it affected school conditions in Holland. deGroot argues that education apparently has considerable influence on measured intelligence. Both Kirk (1958) and Lee (1951) were able to demonstrate that intelligence test performance is directly related to environmental or educational conditions. In the Kirk study, mentally retarded children, given a one-year pre-school learning experience, performed significantly better on subsequent intelligence tests in contrast to their pre-school deprived counterparts. Lee studied Negro children who were born in the southern part of the United States and who then moved to Philadelphia. These children showed improvement in measured intelligence as educational conditions improved, i.e., the move from the southern United States to Philadelphia. Lee found that the greatest changes took place in the early years.

Recently, Deutsch (1960) and Bloom (1964) have been able to pinpoint more precisely the positive effect that early educational training can have upon the development of intelligence. Pre-school training, an innovation in the life of disadvantaged children, is now perceived as a major factor in positive intellectual development.

In the recent report on the educational status of Prince Edward County children prior to the reopening of the schools (Green, et al., 1964) the significant influence of educational conditions upon measured intelligence was more fully demonstrated.

School attendance is a major aspect of the environment of most children between the ages of 6 and 18. The quality of this experience (e.g. urban versus rural education) has been shown to be related to measured intelligence (Miner, 1957). A variety of skills acquired in school are usually considered to be part of a person's general intelligence. Hence, the absence of school experiences constitutes an environment which should severely limit the development of these skills and the development of general intelligence.

In many ways, the environment of Prince Edward County children represented an extreme of what Bloom (1964) called a deprived educational environment. It was an environment where few modes of good language usage were available with little consistent organized support for school-related learning. The opposite extreme of a deprived environment, what Bloom labeled an "abundant" educational environment, includes emphasis on the proper development of language, logical reasoning, and abstract thinking. Although the EDUCATION group of Prince Edward County probably would be far from recipients of an "abundant" environment, their environment substantially excelled that of the NO EDUCATION group. The type of intellectual performance required in school was much different from that required in farming or in caring for the home. It seemed plausible then that the difference in environment between the two Prince Edward County groups would be reflected in the intelligence measures.

An earlier report (Green, et al., 1964) found the impact of four years of non-schooling to significantly affect the measured intelligence of the children so deprived, with the NO EDUCATION group lower than the partially-educated EDUCATION group at all age levels. Children who had never attended school were the most seriously affected with differences as great as 30 I.Q. points between the two groups. All measurements were made before the resumption of formal schooling.

In 1963 the children of the County attended one year of private "Free Schools." In the fall of 1964 the public schools were reopened by court order. This report deals with the question of what, if any, changes in measured intelligence occurred in the EDUCATION and NO EDUCATION groups after the return to formal schooling, specifically whether age or degree of deprivation was critical to measured improvement.

Individual Testing

Subjects

Of the full sample of 288 children (EDUCATION and NO EDUCATION groups) whose intelligence was individually tested in July, 1963, a randomly drawn sub-sample was retested in April, 1965, after a year and a half of formal schooling. The sub-sample consisted of 35 males and females drawn from the original EDUCATION group and 31 males and females drawn from the original NO EDUCATION group. All

Ss were from 9 to 17 years of age at the original 1963 testing.

Instrumentation

The Stanford-Binet (Form L-M) was administered to each S before and after the one and a half years of formal schooling.

Results

Table 4-1

I.Q. of EDUCATION Group, 1963 vs. 1965

Age in 1963	N	Median I.Q. 1963	Median I.Q. 1965	Increase	% Ss Increasing IQ from '63-'65	Sign Test Probability
9-11	12	92.0	97.0	+5	67%	.15*
12-14	16	77.5	83.5	+6	62%	.21*
15-17	7	87.0	91.0	+4	57%	.45*

N = 35

*$p > .05$ or not significant

Tables 4-1 and 4-2 show the median I.Q. for both the EDUCATION and NO EDUCATION groups before and after the resumption of formal education.

As indicated in Table 4-1, there was a slight median increase in I.Q. at all three age levels for the EDUCATION group. However, the Sign Test (Siegel, 1956) showed that none of the increases were statistically significant.

Within the NO EDUCATION group (Table 4-2), statistically significant gains in measured intelligence were made by the 9-11 and 12-14 age groups. The 15-17 NO EDUCATION group was the only age category that indicated no appreciable change. Note, however, the N at that age level was relatively small. From these tables, it appears as though the NO EDUCATION group alone showed significant gains in I.Q. after formal education.

Table 4-2

I.Q. of NO EDUCATION Group, 1963 vs. 1965

Age in 1963	N	Median I.Q. 1963	Median I.Q. 1965	Increase	% Ss Increasing IQ from '63-'65	Sign Test Probability
9-11	16	62.5	67.5	+ 5	86%	p = .002
12-14	11	57.0	75.0	+18	82%	p = .01
15-17	4	68.5	68.0	- 0.5	50%	p = .75*

N = 31

*p > .05 or not significant

Tables 4-3 and 4-4 contain the comparison of median I.Q.'s for the NO EDUCATION and EDUCATION groups in 1963 and 1965 (see Figures 1 and 2). The Mann-Whitney U test (Siegel, 1956) was the significance test used in this analysis.

Table 4-3

I.Q. of EDUCATION vs. NO EDUCATION Groups in 1963

Age Group	EDUCATION Group N	EDUCATION Group Median IQ	NO EDUCATION Group N	NO EDUCATION Group Median IQ	Difference	U*	p <
9-11	12	92.0	16	62.5	29.5	3	.001
12-14	16	77.5	11	57.0	20.5	3	.002
15-17	7	87.0	4	68.5	18.5	4	.07

N = 35 N = 31

*Mann-Whitney U

Table 4-4

I.Q. of EDUCATION vs. NO EDUCATION Groups in 1965 After Universal Schooling

Age in 1963	EDUCATION Group N	EDUCATION Group Median IQ	NO EDUCATION Group N	NO EDUCATION Group Median IQ	Difference	U*	p
9-11	12	97.0	16	67.5	29.5	17.5	.002
12-14	16	83.5	11	75.0	8.5	34	.02
15-17	7	91.0	4	68.0	23.0	4	.07
	N = 35		N = 31				

*Mann-Whitney U

In both 1963 and 1965 the EDUCATION group performed at a significantly higher level than the NO EDUCATION group at all age levels. In 1963 and 1965 the most dramatic difference occurred at the earlier age level (9-11) in which a 30-point difference in measured intelligence was obtained. It should be noted that the 9-11 year-old group for the most part had no formal education (due to their age in 1959) before the closing of the schools.

Figures 1 and 2 clearly demonstrate the trend in measured intelligence for both groups. It is interesting to note that the low point in median I.Q. is at the 12-14 year-old age level in 1963 for both groups. Although the EDUCATION group in 1965 demonstrated the same low point at ages 12-14, the NO EDUCATION group showed an increase of 18 I.Q. points at this age level to put the 12-14 age level at a higher median I.Q. than either of the other age levels of the NO EDUCATION group.

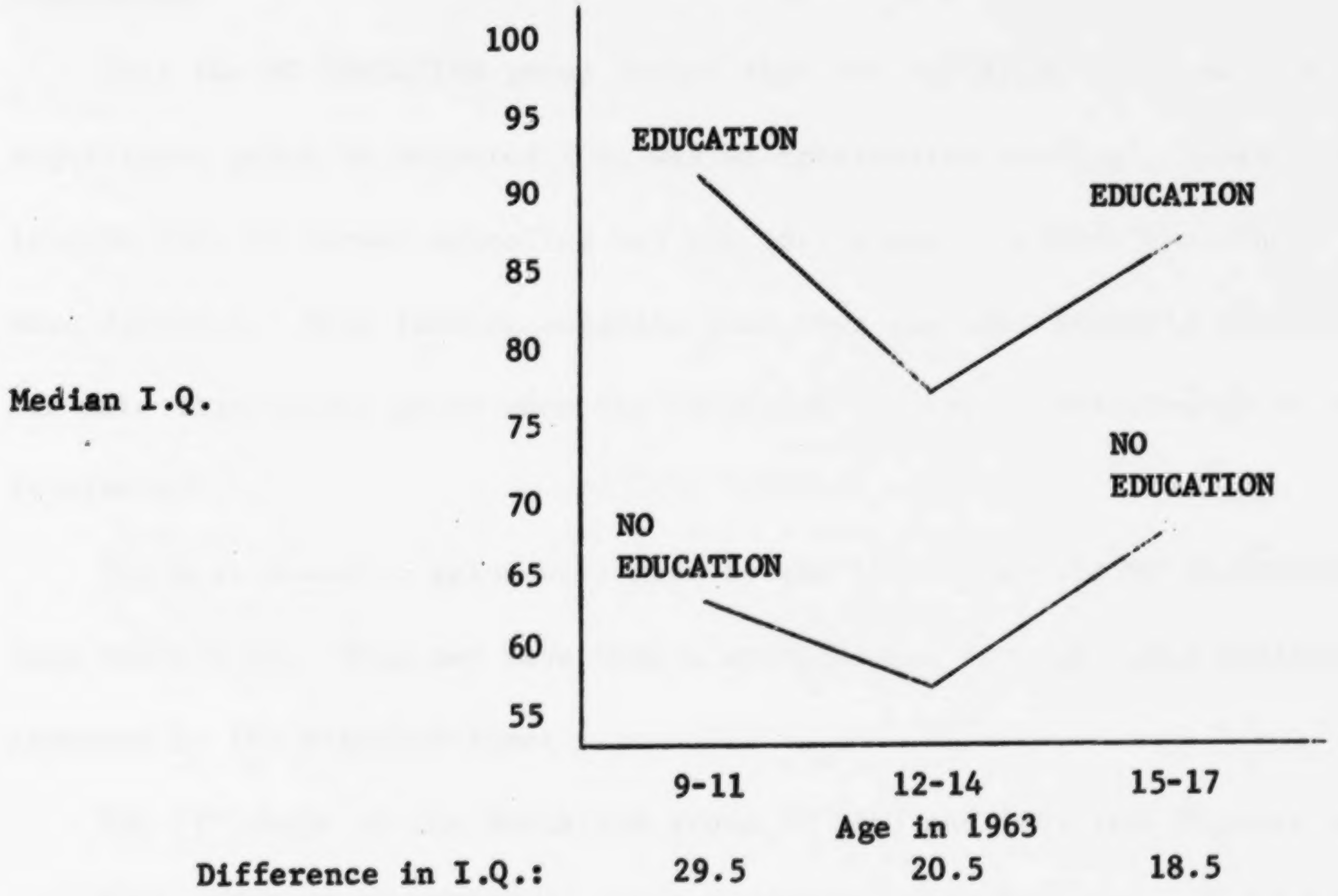

Figure 1: Stanford-Binet I.Q. of EDUCATION vs. NO EDUCATION Groups in 1963 by Age Group

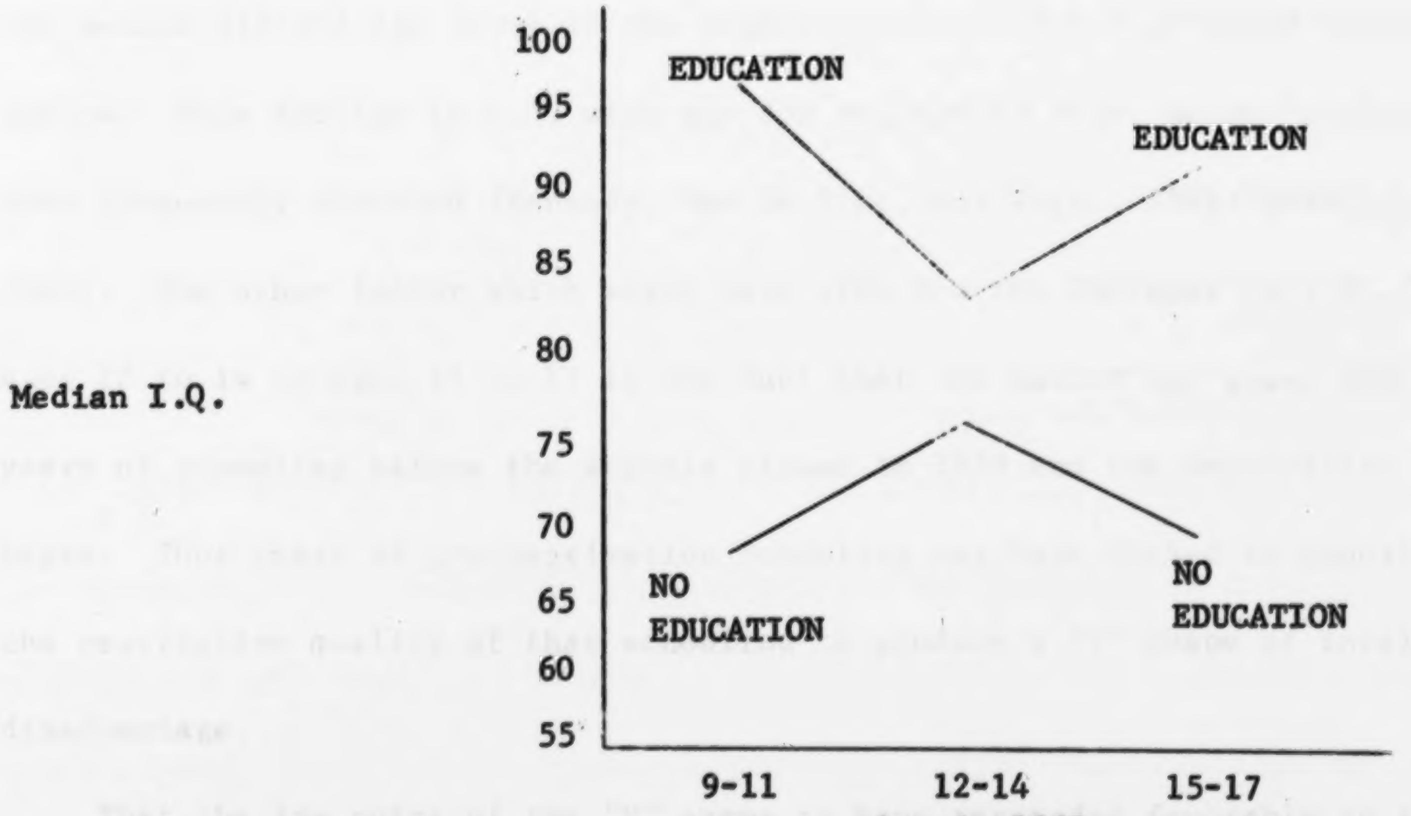

Figure 2: Stanford-Binet I.Q. of EDUCATION vs. NO EDUCATION Groups in 1965 by Age Group

Discussion

That the NO EDUCATION group rather than the EDUCATION group made the only significant gains in measured I.Q. was an interesting finding. Apparently the introduction of formal schooling had the most dramatic effect upon those who were most deprived. This finding suggests that even the most severely deprived children can make significant gains when the education process is reactivated or deprivation is altered.

The most dramatic gains were made by the 12-14 year-old NO EDUCATION group (see Table 4-2). This may have been a critical age for improving abilities assessed by the Stanford-Binet.

The "V" shape of the EDUCATION group of 1963 and 1965 (see Figures 1 and 2) and of the 1963 NO EDUCATION group might be a result of two opposing factors. One factor which might have effected the drop of I.Q. from the first (9-11) to the second (12-14) age level is the negative effect of a segregated school system. This decline in I.Q. with age for segregated Negro school children has been frequently observed (Kennedy, Van De Riet, and White, 1961; Green, _et al._, 1964). The other factor which might have effected the increase in I.Q. from ages 12 to 14 to ages 15 to 17 is the fact that the latter age group had more years of schooling before the schools closed in 1959 and the deprivation period began. Thus years of pre-deprivation schooling may have worked in opposition to the restrictive quality of that schooling to produce a "V" shape of intellectual disadvantage.

That the low point of the "V" seems to have responded favorably to renewed schooling is cause for cautious optimism. The caution stems from the fact that despite significant gains on the part of two age levels in the NO EDUCATION group, there is no age level where the EDUCATION group does not remain significantly higher in I.Q. even after a year and a half of common schooling. Nor can this be explained by equivalent increases in the EDUCATION group since none of these latter increases were large or prevalent enough to be statistically significant. It is therefore apparent that the resumed schooling that brought NO EDUCATION group I.Q.'s closer to those of the less severely deprived EDUCATION group I.Q.'s (at the 12-14 age level) nevertheless failed to close the gap between them at all age levels. As of 1965, all age group medians of the NO EDUCATION sub-sample were still in an I.Q. range that the Binet norms refer to as "mentally defective" (below 79). All the 1965 age group medians of the EDUCATION sub-sample were above this.

In summary, one and a half years of resumed schooling after an extended period of educational deprivation brought about improvement in measured I.Q. However, statistically significant improvement in measured intelligence occurred in only two of the six age and deprivation categories tested. Both age and degree of educational deprivation appeared critical to measured improvement of intelligence; the latter factor being the most critical of the two.

Group Testing on a Non-Verbal Measure of Intelligence

Subjects

From the full population of EDUCATION and NO EDUCATION school-age children of Prince Edward County, a sample of 528 Ss was drawn and tested on a group-administered test of intelligence in May, 1964. (Pre-measures from this same instrument were not collected during the 1963 testing period. Hence, a pre- and post-education analysis was not possible.) Ss ranged in age at the time of testing from 8 to 17 years of age.

Instrumentation

The Chicago Non-Verbal Examination was administered so that minimal emphasis would be on S's comprehension of complex verbal instructions.

Results and Discussion

Table 4-5

Mean Non-Verbal I.Q. of EDUCATION vs. NO EDUCATION Groups in 1964 as a Function of Age in 1964

Age in 1964	EDUCATION Group			NO EDUCATION Group			Mean Difference	t
	N	Mean IQ	SD	N	Mean IQ	SD		
8	18	95.7	15.1	46	87.4	13.5	+ 8.3	2.05**
9	21	90.3	15.9	62	80.8	11.4	+ 9.5	2.53**
10	12	90.7	17.6	45	77.3	11.7	+13.4	2.48**
11	18	85.7	20.6	36	76.0	15.5	+ 9.7	1.77*
12	24	81.5	16.2	36	68.4	14.9	+13.1	3.17***
13	25	82.4	16.2	27	72.8	14.8	+ 9.6	2.23**
14	27	86.4	13.7	30	77.9	12.0	+ 8.5	2.50**
15	14	92.7	15.8	36	78.9	14.4	+13.8	3.43***
16	14	91.2	12.6	17	82.5	17.9	+ 8.7	1.69*
17	4	89.8	11.4	16	81.4	12.6	+ 8.4	1.28
Sum:	177			351				
Mean:		87.6			78.3		+ 9.3	

$*p < .10$
$**p < .05$
$***p < .01$

Thus, in spring, 1964, after nine months of "Free Schools" and before the reopening of the public schools, the mean I.Q. of the EDUCATION group excelled the mean I.Q. of the NO EDUCATION group at all age levels; this was statistically significant at nearly all age levels. Thus the non-verbal measure with substantially more Ss at each age level nevertheless paralleled the findings of the Stanford-

Binet in the preceding section.

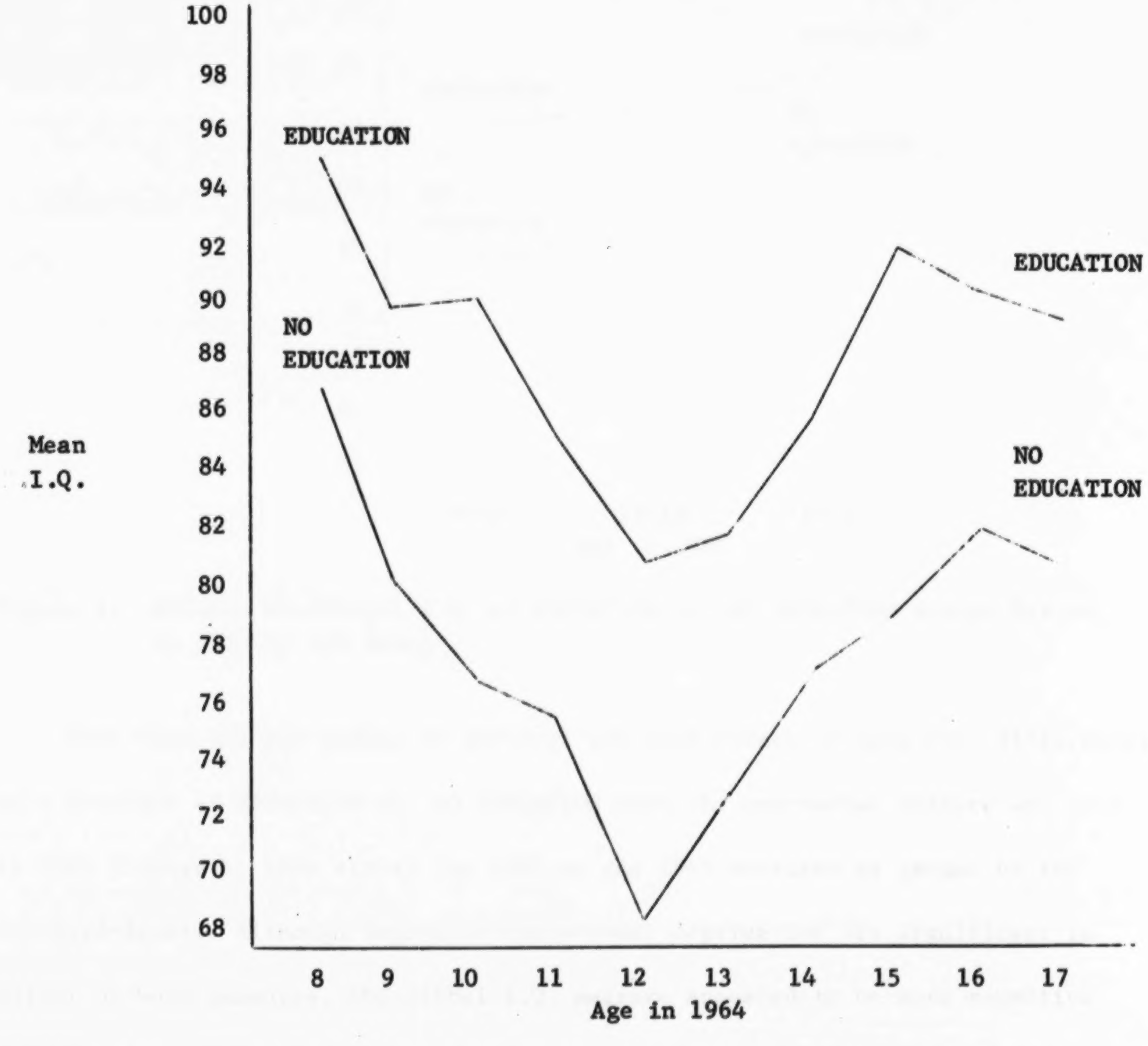

Figure 3: Chicago Non-Verbal I.Q. of EDUCATION vs. NO EDUCATION Groups in 1964 by Each Year of Age

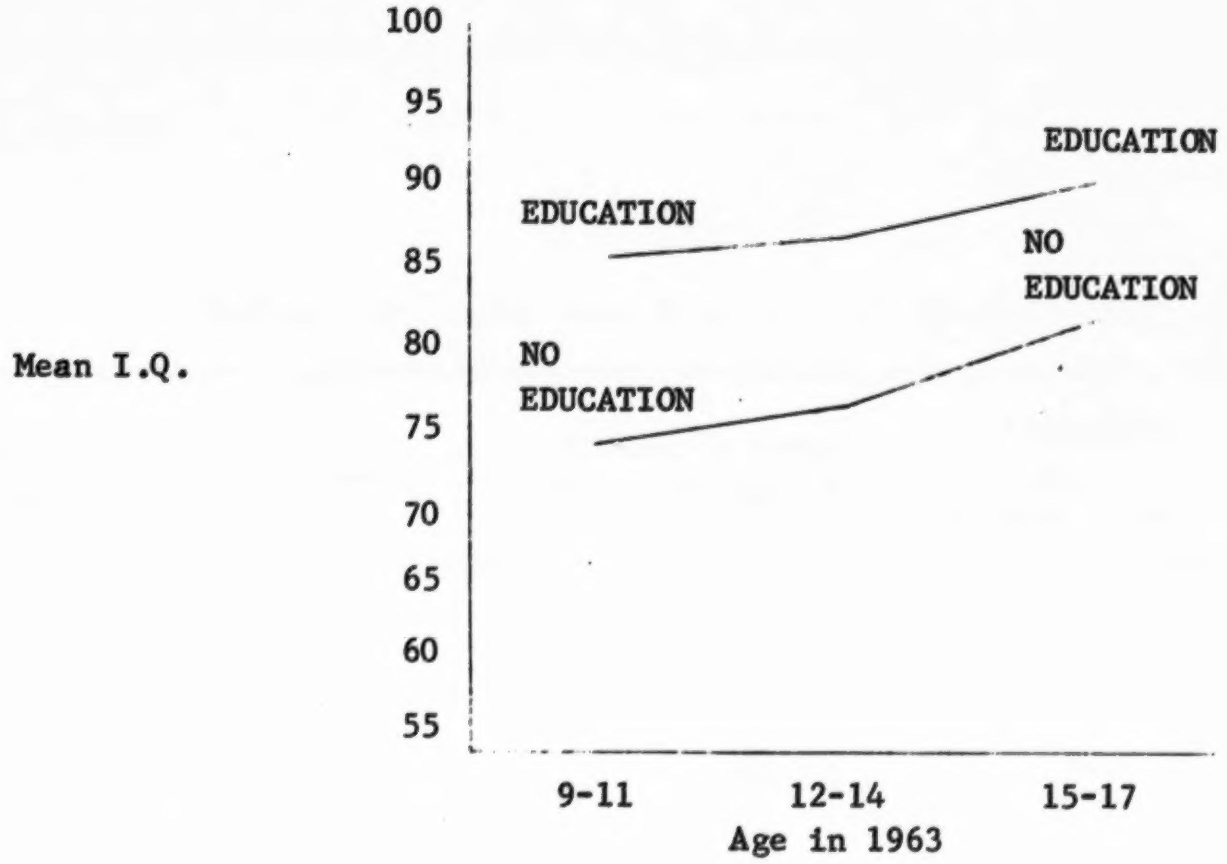

Figure 4: Chicago Non-Verbal I.Q. of EDUCATION vs. NO EDUCATION Groups Tested in 1964 by Age Group

Note that the age groups of interest are much closer in mean I.Q. differences as a function of EDUCATION vs. NO EDUCATION when the non-verbal measure was used in 1964 (Figure 4) than either the 1963 or the 1965 measures as gauged by the Stanford-Binet. Although degree of educational deprivation was significant in effect on both measures, the verbal I.Q. measure appeared to be more sensitive to it. This is even more striking when the fact that the Chicago Non-Verbal manual (Brown, 1940) cautions that "in comparison with the Stanford-Binet, it /Chicago Non-Verbal Examination/ seems to rate the dull children somewhat lower and the bright ones somewhat higher" (page 34) is taken into account. On the contrary, for the educationally deprived (and presumably verbally deprived) children of the Prince Edward County sample, the non-verbal test rated the "bright" lower and the "dull" higher than the Stanford-Binet. Apparently de-emphasis of verbal skills somewhat shrank measured differences. Verbal and non-verbal test results are comparatively listed by year of testing in Tables 4-6, 4-7, and 4-8.

Table 4-6

Median I.Q.'s for Ages 9-11 in 1963 for 1963, 1964, 1965

Year Tested	Instrument	EDUCATION Group N	EDUCATION Group Median IQ	NO EDUCATION Group N	NO EDUCATION Group Median IQ	Antecedent Conditions
1963	Stanford-Binet	12	92.0	16	62.5	4 years of no PEC schooling
1964	Chic. Non-Verbal	54	85.7	117	76.0	1 year PEC Free Schools
1965	Stanford-Binet	12	97.0	16	67.5	1 year Free Schools and nearly 1 year public school

Table 4-7

Median I.Q.'s for Ages 12-14 in 1963 for 1963, 1964, 1965

Year Tested	Instrument	EDUCATION Group N	EDUCATION Group Median IQ	NO EDUCATION Group N	NO EDUCATION Group Median IQ	Antecedent Conditions
1963	Stanford-Binet	16	77.5	11	57.0	4 years of no PEC schooling
1964	Chic. Non-Verbal	66	86.4	73	77.9	1 year PEC Free Schools
1965	Stanford-Binet	16	83.5	11	75.0	1 year Free Schools and nearly 1 year public school

Table 4-8

Median I.Q.'s for Ages 15-17 in 1963 for 1963, 1964, 1965

Year Tested	Instrument	EDUCATION Group N	EDUCATION Group Median IQ	NO EDUCATION Group N	NO EDUCATION Group Median IQ	Antecedent Conditions
1963	Stanford-Binet	7	87.0	4	68.5	4 years of no PEC schooling
1964	Chic. Non-Verbal	18	89.8	33	81.4	1 year PEC Free Schools
1965	Stanford-Binet	7	91.0	4	68.0	1 year free Schools and nearly 1 year public school

As is often observed in educationally deprived or disadvantaged children, the mean I.Q. decreased with increasing age from age 8 to 11 or 12 (see Figure 3) for both the EDUCATION and NO EDUCATION groups. However, the negative product-moment correlation between age and I.Q. for the 8-11 age range was significant only for the NO EDUCATION group (r = -.191, n = 189, p .05). On the other hand, the measured I.Q. of the sample seems to have increased with age from age 12 to 17. This was true for both the EDUCATION and NO EDUCATION groups; their significant positive correlations of age with I.Q. for 12-17 year-olds were +.256 (n = 108, p .01) and +.303 (n = 162, p .01). These, of course, are substantial correlations for an N of this size. What might have brought about this increase? For one, the Chicago Non-Verbal Examination manual suggests that speed of performance is heavily weighted in its scoring. Perhaps performance speed increased from age 12 to 17. On the other hand, the 1963 Stanford-Binet measures showed the same increase in I.Q. with age from age 12 up. For an answer, it is necessary to look at the differential education history of those below and above age 12 in 1964. Five years earlier, in 1959, the public schools were closed. Since public schooling in Prince Edward County begins at age 6 (there is no kindergarten), no child under 12 in 1964 probably ever had the experience of public schooling before the schools were closed in 1959. Thus, the 8 to 11 year-olds (as of 1964) of the NO EDUCATION group have a common total lack of educational experience prior to the deprivation period. Thus, the longer they were out of school, the more depressed the I.Q. and we have our significant negative correlation of I.Q. with age. On the other hand, children 12 and over in 1964 do have pre-deprivation school experience; the older they are, the more years of education they had before the public schools closed. Here we see what may well be the basis for the significant positive correlation of I.Q. with age for the children of age 12 to 17. This was, of course, the same explanation found relevant in the discussion of the "V" shape over age of the Stanford-Binet data.

In summary, it was again demonstrated that both age and degree of educational deprivation appeared critical to measured magnitude of intelligence. The non-verbal measure found smaller mean differences in I.Q. as a function of degree of deprivation than the verbal measure used before and after its administration. Nevertheless, the I.Q.'s of those children with even sporadic education (EDUCATION group) excelled those having no education at all (NO EDUCATION group). This difference held at all ages regardless of the measurement used to assess it.

REFERENCES

Bloom, Benjamin S., Stability and Change in Human Characteristics, New York: John Wiley & Sons, Inc., 1964.

Brown, Andrew W., Manual of Directions for the Chicago Non-Verbal Examination, New York: Psychological Corporation, 1940.

deGroot, A. D., "War and the Intelligence of Youth," Journal of Abnormal and Social Psychology, 1948, 43, 596-597.

Deutsch, Martin, "Minority Group and Class Status as Related to Social and Personality Factors in Scholastic Achievement," Monograph No. 2, Society for Applied Anthropology, 1960.

Green, Robert L., Hofmann, Louis J., Morse, Richard J., Hayes, Marilyn E., and Morgan, Robert F., The Educational Status of Children in a District Without Public Schools, Cooperative Research Project No. 2321, United States Office of Education, Department of Health, Education and Welfare, 1964.

Kennedy, Wallace A., Van De Riet, Vernon, and White, James C., Jr., The Standardization of the 1960 Revision of the Stanford-Binet Intelligence Scale on Negro Elementary-School Children in the Southeastern United States, Cooperative Research Project No. 954, United States Office of Education, Department of Health, Education and Welfare, 1961.

Kirk, S. A., Early Education of the Mentally Retarded, Urbana: University of Illinois, 1958.

Lee, E. S., "Negro Intelligence and Selective Migration: A Philadelphia Test of the Klineberg Hypothesis," American Sociological Review, 1951, 16.

Lorge, Irving, "Schooling Makes a Difference," Teachers College Record, 1945, 46, 483-492.

Miner, John B., Intelligence in the United States, New York: Springer Publishing Company, Inc., 1957.

Siegel, Sidney, Non Parametric Statistics, New York: McGraw-Hill Book Company, Inc., 1956.

Chapter V

ACADEMIC ACHIEVEMENT OF PRINCE EDWARD COUNTY CHILDREN FOLLOWING A YEAR OF PRIVATE AND A YEAR OF PUBLIC SCHOOLING

Although most measures of intellectual performance are highly related and tend to be conceptually indistinguishable, a separate section describes the academic achievement test scores of the Prince Edward County children. This was due mainly to the more careful consideration that standardized achievement test constructors give to questions of growth and development. In this section, the comparative achievement test results of Prince Edward County children are described over several age levels.

The evidence for determing academic achievement change was collected over a two-year period, and this evidence consisted entirely of standardized achievement tests. Teachers' assessment of the students' achievement behavior was, for the most part, fragmentary and was not released to the investigators.

Three tests were used to assess achievement. These were the Stanford Achievement Test (1954), the Gates Primary Reading Tests, and the Metropolitan Achievement Test. The levels and forms used ranged over the entire level and were chosen individually during the first testing (1963) and were chosen for classes (structured by age and achievement levels) during the following test periods, using the teachers' best estimates of the suitability of the various levels. This resulted in some tests being slightly too easy or too difficult and probably led to a number of combinations of tests for any one person (i.e., a child may have had an Intermediate form first; a Primary form second, etc.). While this may have resulted in a smaller estimate of gain for some persons, it was likely to be reversed for others, and the investigators do not feel that any systematic biases resulted from the various combinations of tests and forms.

Most of the children tested in the initial study were tested with the Stanford Achievement Test (July, 1963), and retests with the Stanford would have been most appropriate. However, the Prince Edward County Free School personnel decided to use the Metropolitan Achievement Test for placement and evaluation of elementary school children. These results (February and June, 1964) were made available to the research team.

The Gates Primary Reading Tests were administered in June, 1964, and provide a separate evaluation of reading achievement although they yield no estimate of reading level change over the school year.

The Stanford Achievement Test scores were collected over a two-year period. The summer, 1963, and May, 1964, scores yield an estimate of achievement changes during the Free School period. Permission was obtained from the Prince Edward County school board officials to retest children in 1965. This testing allowed an analysis of achievement changes during the first year of public schooling and analyses of differences between the Free School and public school program. A large attrition over the three testing periods limited the sample sizes decidedly, and, to some degree, limits the inferences about achievement.

Special Problems in Subtest Analyses of the Metropolitan Achievement Tests

One of the original intentions of this study was to determine whether academic achievement scores in separate areas were differentially affected by the layoff and return to school.

This analysis rests on the fact that separate subtests within the Stanford and the Metropolitan achievement tests differentially measure these areas, i.e., that the subtest scores are moderately uncorrelated. Such was not the case, however, and many of the subtest intercorrelations exceeded the test-retest subtest correlations. While most of the test-retest correlations on the separate age samples were relatively high (most being from r = .70 to r = .90), the subtest intercorrelations were as high or higher both within a testing period and over the retesting period. In fact, the subtest intercorrelations within one testing period usually exceeded the test-retest reliabilities.

Such an outcome does not mean, of course, that the achievement test data are useless, but that the subtest scores are all heavily loaded on the same factor and that differential measurement was not produced. It also means that the gain scores would tend to be relatively unreliable and that the differential gains within subject matter areas would be relatively unstable. It does not mean, however, that the initial or final mean achievement level on these subtests are not meaningful although most of these means were also highly related.

The adequacy of the achievement tests to produce good lower estimates of achievement is also a problem. If no items are answered, the usual procedure is to give a grade equivalent score which is the lowest possible score. In the lower levels, this score is 1.0 grade equivalents and does not, of course, represent the actual achievement very well. While the "floor" of a test is not usually a problem, it was in the case of Prince Edward County school children. Its effects are likely to be exhibited in (a) fairly high estimates of achievement of very young children; (b) underestimates of actual achievement gains for these same children; (c) nonsymmetrical distributions; (d) generally, an underestimate amount of gains for the very low scores (sort of a negative regression effect).

This comes about because the chance score level is probably above the actual achievement level for all persons for whom the test was too difficult. This would likely have occurred more often during the 1963 testing than in later testings when more information was available to the teachers who assisted in selecting the test levels.

This depressor effect on the gain scores would be counteracted by another effect--the increase gained from greater test sophisication. This again would be exhibited most clearly in the lowest scores and for the younger children who were being initiated to testing.

Neither of these contaminations can be evaluated in the achievement analysis, but they remain as factors which may have produced some of the effects shown in the following analyses.

Academic Achievement of Six- to Twleve-Year-Old Children

Table 5-1 contains the February and June, 1964, mean grade equivalent scores for the total group who could be classified into the EDUCATION and NO EDUCATION groups.

As expected, the greatest majority of these children fall into the NO EDUCATION group. The large differences between the EDUCATION and NO EDUCATION groups are immediately apparent. The EDUCATION group changed about 1.2 grade equivalent scores while the NO EDUCATION group changed about .35. A check on the age of the samples revealed that the average age of the EDUCATION group in February was 119 months and, correspondingly, the average age of the NO EDUCATION group was 114 months. In the June sample the average ages were 116 and 101, respectively. Even though four months had elapsed, the samples became much younger, the NO EDUCATION group becoming 13 months younger!

Table 5-1

Mean Grade Equivalent Scores on Metropolitan Achievement Test
For EDUCATION and NO EDUCATION Groups
(February and June, 1964)

	NO EDUCATION							EDUCATION					
	Subtest							Subtest					
	1	SD	2	SD	3	SD		1	SD	2	SD	3	SD
Feb. (N=319)	1.71	.65	1.78	.78	1.80	.69	(N=91)	2.35	.94	2.39	.99	2.47	1.12
June (N=236)	2.02	.67	2.15	.75	2.15	.83	(N=95)	3.58	1.81	3.61	.85	3.69	1.76

1 = Word Knowledge
2 = Word Discrimination
3 = Reading

The results, therefore, become somewhat less surprising when age is taken into account. The large samples are apparently constituted quite differently, and matched analysis of achievement scores was made.

The mean achievement scores of the two matched groups for four subtests are presented in Table 5-2. The highest mean score for the EDUCATION group occurs in June with a 3.25 at age 10 in the Word Discrimination subtest. The highest score for the NO EDUCATION group occurs in the Arithmetic Concepts subtest with 3.32 score at age 10. In general, however, the February scores of the EDUCATION group range about 1.0 from age 7 to 11 while the NO EDUCATION group scores range about the same amount from age 6 to 11. However, nearly all the average February scores for the EDUCATION group are above 2.0 grade equivalents.

Table 5-2

Mean Grade Equivalent Scores on Metropolitan Achievement Test
For EDUCATION and NO EDUCATION Groups
By Age Groups
(February and June, 1964)

Age	Date	EDUCATION				NO EDUCATION			
		Subtest				Subtest			
		1	2	3	4	1	2	3	4
6	Feb.					1.21	1.25	1.37	1.24
	June					1.65	1.65	1.74	1.83
7	Feb.	1.67	1.68	1.67	1.78	1.46	1.49	1.59	1.50
	June	1.85	1.82	2.25	2.22	1.83	1.85	1.87	2.00
8	Feb.	2.00	2.00	2.07	1.83	1.55	1.60	1.58	1.83
	June	2.25	2.64	2.53	2.49	1.90	2.16	2.12	2.49
9	Feb.	2.20	2.27	2.41	2.19	1.65	1.88	1.75	1.92
	June	2.25	2.54	2.51	2.43	2.10	2.30	2.22	2.56
10	Feb.	2.58	2.58	2.60	3.29	1.62	1.62	1.66	2.06
	June	3.24	3.25	2.98	3.84	2.04	2.21	2.13	2.44
11	Feb.	2.05	2.19	2.14		2.18	2.19	2.33	2.72
	June	2.38	2.54	2.76		2.66	2.78	2.88	3.32

1 = Word Knowledge
2 = Word Discrimination
3 = Reading
4 = Arithmetic Concepts

Table 5-3 contains the average gains of the students classified by subtest and age.

The average gains in Arithmetic Concepts seem greatest for the NO EDUCATION group at many of the age levels although there is no consistent superiority in gain for the EDUCATION group on this subtest.

The small sample size of the EDUCATION group limits generalizations about this group, and their average gains appear to fluctuate over age levels somewhat more than do the gains of the NO EDUCATION group. In general, the average gains for the younger children tend to be somewhat lower than those of the older children in the NO EDUCATION group. This finding is not consistent with some theoretical positions about age and achievement such as that of Bloom (1964). However, the greater gains made by the older age group are consistent with the I.Q. data, and, once again, this increase may be related to the pre-deprivation education of the older group.

Table 5-3

Mean Grade Equivalent Score Gain on Metropolitan Achievement Test
During Four-Month Period
For EDUCATION and NO EDUCATION Groups

Age	Subtest	Group			
		N	EDUCATION	N	NO EDUCATION
6	Word Knowledge			23	.44
	Word Discrimination				.40
	Reading				.37
	Arithmetic Concepts				.59
7	Word Knowledge	6	.18	26	.37
	Word Discrimination		.24		.36
	Reading		.58		.28
	Arithmetic Concepts		.44		.50
8	Word Knowledge	12	.25	42	.35
	Word Discrimination		.64		.56
	Reading		.47		.54
	Arithmetic Concepts		.66		.51
9	Word Knowledge	11	.25	42	.45
	Word Discrimination		.27		.42
	Reading		.10		.47
	Arithmetic Concepts		.24		.64
10	Word Knowledge	8	.66	35	.42
	Word Discrimination		.67		.59
	Reading		.38		.47
	Arithmetic Concepts		.55		.40
11	Word Knowledge	7	.33	31	.48
	Word Discrimination		.35		.59
	Reading		.62		.55
	Arithmetic Concepts		.62		.60

The average change for the total NO EDUCATION group is higher than that of the EDUCATION group for all subtests. Table 5-4 also contains data from a group labeled "No Data" which is probably a conglomeration of children who had and had not attended school, but whose 1959-1963 history was unknown.

The NO DATA group tends to have gain scores and February and June, 1964, scores which fall between the scores achieved by the EDUCATION and NO EDUCATION groups. The NO DATA group more closely approximates the NO EDUCATION group which is predictable from the percentages of all children of this age in the EDUCATION and NO EDUCATION groups.

Table 5-4

Mean Grade Equivalent Scores on Metropolitan Achievement Test
For EDUCATION, NO EDUCATION, and NO DATA Groups

Subtest		Group		
		EDUCATION (N=45)	NO EDUCATION (N=208)	NO DATA (N=130)
Word Knowledge	Feb.	2.10	1.64	1.68
	June	2.38	2.07	2.03
	Diff.	.28	.57	.35
Word Discrimination	Feb.	2.14	1.73	1.70
	June	2.58	2.22	2.15
	Diff.	.44	.49	.45
Reading	Feb.	2.19	1.73	1.79
	June	2.58	2.21	2.14
	Diff.	.39	.48	.35

The Gates Primary Reading Tests were administered to the Prince Edward County children in June, 1964. The results are presented in Table 5-5.

Two aspects of these data are quite interesting. There seems to be no great superiority of the children in the EDUCATION group at the upper age levels, and the overlap in the score distributions is quite pronounced. Secondly, the range in mean reading grade equivalents for both groups over the 6 to 7 year range is highly constricted. It is about one unit for the NO EDUCATION group and perhaps even less for the EDUCATION group even though the sample sizes limit any preciseness in this estimation. What is quite obvious, however, is that the variability is related to age level and that the means are ranked well with age until age 10 or 11 where both groups tend to reach a peak.

This result is not unexpected and is probably due to the sampling of classes for the Gates. Older children in early grades probably were in these classes because of their poor reading performance.

Table 5-5

Mean Grade Equivalent Scores on the Gates Primary Reading Test
For EDUCATION and NO EDUCATION Groups
June, 1964

Age	EDUCATION			NO EDUCATION		
	N	Mean	SD	N	Mean	SD
6				10	2.05	.38
7	6	2.48	.22	32	2.23	.54
8	3	2.43	.15	21	2.31	.62
9	4	3.23	1.00	9	2.66	.58
10	6	3.01	.98	19	3.07	.79
11	17	3.28	.91	19	2.90	.83
12	11	3.31	.77	17	3.01	.85

Academic Achievement of Students from Twelve to Eighteen Years Old

Two questions were investigated in the following analysis: (a) what was the level of academic achievement of the various groups of Prince Edward County Negro children in 1963, 1964, and 1965? and (b) what change occurred over the one- and two-year periods?

Table 5-6 contains the mean scores for all children of particular ages in 1964 on all the subtests of the Stanford Achievement Test.

In each case, the mean achievement of the EDUCATION group is higher than the mean achievement of the NO EDUCATION group. In most cases, the differences are between 1.5 and 2.5 grade equivalent scores.

The sample sizes indicate that there was not a large amount of overlap in children tested and the means displayed are based on substantially different subject samples, e.g., the samples at age 16 are 25, 36, and 14 for the EDUCATION group and 7, 22, and 20 for the NO EDUCATION group. It is clear that the 1963 and 1964 samples in the first case can overlap somewhat, but not in the latter case.

There is a slight tendency for the 1965 means to be somewhat more divergent for the 16- to 18-year-old samples than for the 12- to 15-year-old group indicating possibly that academic experiences for younger children tend to reduce the gap. However, the initial 1963 gap tends also to be somewhat small for the 12- to 15-year-old group.

In Table 5-7 the 1964 mean scores of a third group are compared with the mean scores of the EDUCATION and NO EDUCATION group. This group was named the NO DATA group because they could not be classified on whether they had attended school during the school closing period.

Table 5-6

Stanford Achievement Subtest Means
1963, 1964, and 1965 Data

Age	Group	Paragraph Meaning			Word Meaning			Spelling		
		1963	1964	1965	1963	1964	1965	1963	1964	1965
12	EDUCATION			4.01 N=25			3.77			3.90
	NO EDUCATION			2.84 N=101			2.71			3.12
13	EDUCATION	4.50 N=6	6.06 N=11	6.10 N=13	4.40	6.20	5.62	3.97	5.80	6.15
	NO EDUCATION	3.69 N=7	3.81 N=19	4.75 N=20	4.04	4.05	4.47	2.87	4.09	4.51
14	EDUCATION	4.64 N=17	6.17 N=26	6.54 N=19	4.38	6.03	5.60	4.32	6.52	6.45
	NO EDUCATION	3.29 N=14	4.09 N=28	5.21 N=27	3.04	4.08	4.80	2.71	4.56	5.35
15	EDUCATION	6.63 N=8	6.30 N=22	7.37 N=20	5.96	6.24	6.84	5.81	7.45	7.93
	NO EDUCATION	4.15 N=20	4.85 N=39	5.73 N=28	4.05	4.29	5.19	4.02	4.99	6.34
16	EDUCATION	6.10 N=25	7.03 N=36	8.32 N=14	5.84	7.32	8.17	6.78	7.89	9.05
	NO EDUCATION	5.20 N=7	5.08 N=22	6.02 N=20	4.57	4.91	5.69	5.13	4.93	6.64
17	EDUCATION	7.90 N=14	8.44 N=19	8.32 N=11	7.08	8.64	8.32	8.24	9.39	7.95
	NO EDUCATION	5.55 N=8	6.21 N=16	5.82 N=10	5.65	5.76	5.71	5.86	5.98	6.38
18	EDUCATION	5.98 N=10	7.29 N=22	8.92 N=14	6.43	7.88	9.10	8.15	8.97	10.08
	NO EDUCATION		5.80 N=8	6.23 N=3		5.83	6.23		6.06	7.33
19	EDUCATION		6.90 N=18			7.81			8.53	
	NO EDUCATION		5.95 N=8			6.56			6.98	

continued

Table 5-6 (continued)

Stanford Achievement Subtest Means
1963, 1964, and 1965 Data

Age	Group	Language			Arithmetic Reasoning			Arithmetic Computation		
		1963	1964	1965	1963	1964	1965	1963	1964	1965
12	EDUCATION						4.04 N=25			4.02
	NO EDUCATION						2.95 N=101			3.03
13	EDUCATION	3.60 N=6	6.48 N=11	5.27 N=13	3.93	6.67	5.79	4.35	5.71	5.54
	NO EDUCATION	0.8 N=7	3.21 N=19	3.79 N=20	3.11	4.21	4.42	3.03	3.88	4.23
14	EDUCATION	4.24 N=17	5.34 N=26	5.14 N=19	4.49	6.13	6.06	4.55	5.81	5.69
	NO EDUCATION	1.99 N=14	2.66 N=28	4.09 N=27	2.87	4.63	4.75	3.07	4.68	4.76
15	EDUCATION	6.39 N=8	6.48 N=22	6.91 N=20	5.71	6.40	7.06	5.89	7.16	6.99
	NO EDUCATION	3.40 N=20	3.95 N=39	5.46 N=28	3.88	4.88	5.33	3.87	4.83	4.98
16	EDUCATION	5.91 N=25	7.92 N=36	8.36 N=14	5.74	7.26	7.63	5.95	7.63	7.58
	NO EDUCATION	3.93 N=7	4.48 N=22	5.46 N=20	5.17	5.40	5.97	4.51	5.63	5.14
17	EDUCATION	8.78 N=14	9.85 N=19	7.45 N=11	6.99	8.34	7.49	7.10	8.59	7.35
	NO EDUCATION	5.24 N=8	5.74 N=16	5.53 N=10	4.85	5.78	5.56	4.43	6.47	5.34
18	EDUCATION	5.95 N=10	8.11 N=22	8.94 N=14	5.54	7.84	8.76	6.06	7.95	8.57
	NO EDUCATION		5.41 N=8	5.90 N=3		5.84	5.40		6.23	5.97
19	EDUCATION		8.75 N=18			7.46			7.90	
	NO EDUCATION		6.95 N=8			6.05			6.59	

Table 5-7

Mean 1964 Stanford Achievement Test Scores
For the EDUCATION, NO EDUCATION, and NO DATA Groups

Age	N	Group	Subtest					
			Paragraph Meaning	Word Meaning	Spelling	Language	Arithmetic Reasoning	Arithmetic Computation
13	11	EDUC	6.06	6.20	5.80	6.48	6.67	5.71
	30	NO DATA	5.69	5.21	5.52	4.74	5.63	5.92
	19	NO EDUC	3.81	4.05	4.09	3.21	4.21	3.88
14	26	EDUC	6.17	6.03	6.52	5.34	6.13	5.81
	32	NO DATA	5.10	4.92	5.50	4.25	5.36	5.45
	28	NO EDUC	4.09	4.08	4.56	2.66	4.63	4.68
15	22	EDUC	6.30	6.24	7.45	6.48	6.40	7.16
	33	NO DATA	5.75	5.65	6.54	5.57	5.69	5.98
	39	NO EDUC	4.85	4.29	4.99	3.95	4.88	4.83
16	36	EDUC	7.03	7.32	7.89	7.92	7.26	7.63
	23	NO DATA	6.28	6.51	6.79	6.22	6.29	6.23
	22	NO EDUC	5.08	4.91	4.93	4.48	5.40	5.63
17	19	EDUC	8.44	8.64	9.39	9.85	8.34	8.59
	9	NO DATA	7.58	8.03	8.11	7.55	7.10	7.28
	16	NO EDUC	6.21	5.76	5.98	5.74	5.78	6.47
18	22	EDUC	7.29	7.88	8.97	8.11	7.84	7.95
	14	NO DATA	9.18	9.04	9.69	9.82	8.48	8.64
	8	NO EDUC	5.80	5.83	6.06	5.41	5.84	6.23

Their mean scores tend to fall midway between the scores of the other two groups and give further evidence about the stability of the differences between the EDUCATION and NO EDUCATION groups.

The second question concerned the achievement changes within the three groups during the 1963-1964 and 1964-1965 periods. Tables 5-8, 5-9, and 5-10 contain data relevant to this question.

Since the number of students who had taken the Stanford on all three test sessions was very small, an age analysis was not appropriate and scores were summed over the various age levels.

In Table 5-8 the results for the 1963-1964 period are presented. In Table 5-9 the 1964-1965 scores are reported, and in Table 5-10 the 1963-1965 scores are presented.

Table 5-8

Group Gains on the Stanford Achievement Test
For the 1963-1964 Period
For EDUCATION, NO EDUCATION, and NO DATA Groups
(Matched Samples)

Subtest	EDUCATION (N=79)			NO EDUCATION (N=50)			NO DATA (N=35)		
	1963	1964	Gain	1963	1964	Gain	1963	1964	Gain
Paragraph Meaning	6.09	6.72	.63	4.59	5.64	1.05	4.84	6.40	1.54
Word Meaning	5.75	7.00	1.25	4.34	5.20	.86	5.15	6.43	1.28
Spelling	6.46	7.78	1.34	4.25	5.60	1.35	5.27	6.95	1.68
Language	6.19	7.20	1.01	3.85	4.64	.79	5.15	6.31	1.16
Arithmetic Reasoning	5.61	6.95	1.34	4.14	5.34	1.20	4.76	6.53	1.77
Arithmetic Computation	5.80	7.27	1.47	4.21	5.59	1.38	4.99	6.71	1.72

Table 5-9

Group Gains on the Stanford Achievement Test
For the 1964-1965 Period
For EDUCATION, NO EDUCATION, and NO DATA Groups
(Matched Samples)

Subtest	Group								
	EDUCATION (N=83)			NO EDUCATION (N=87)			NO DATA (N=81)		
	1964	1965	Gain	1964	1965	Gain	1964	1965	Gain
Paragraph Meaning	6.93	7.81	.88	4.99	5.61	.62	6.09	6.70	.61
Word Meaning	7.24	7.61	.37	4.81	5.24	.43	6.22	6.43	.21
Spelling	8.14	8.47	.33	5.24	6.09	.85	6.62	7.15	.53
Language	7.50	7.59	.09	4.16	4.89	.73	5.81	6.09	.28
Arithmetic Reasoning	7.15	7.31	.16	5.09	5.29	.20	6.22	6.31	.09
Arithmetic Computation	7.73	7.28	-.45	5.34	5.03	-.31	6.34	6.13	-.21

Table 5-10

Group Gains on the Stanford Achievement Test For the 1963-1965 Period For EDUCATION, NO EDUCATION, and NO DATA Groups (Matched Samples)

Subtest	EDUCATION (N=48)			NO EDUCATION (N=35)			NO DATA (N=36)		
	1963	1965	Gain	1963	1965	Gain	1963	1965	Gain
Paragraph Meaning	6.36	8.05	1.69	4.67	6.57	1.90	4.77	7.22	2.45
Word Meaning	5.97	7.75	1.78	4.55	6.10	1.55	5.12	6.49	1.37
Spelling	6.87	8.62	1.75	4.48	6.83	2.35	5.02	7.02	2.00
Language	6.49	7.83	1.34	4.18	5.55	1.37	5.19	6.40	1.21
Arithmetic Reasoning	5.86	7.70	1.84	4.16	5.75	1.57	4.63	6.47	1.84
Arithmetic Computation	6.03	7.64	1.63	4.00	5.36	1.36	4.83	6.28	1.45

The largest total sample sizes occur in the 1964-1965 period, and the smallest occur over the two-year period. Considering Table 5-8 first, the gains made by all groups seem surprisingly large. This is probably due to two factors. The tests administered in the field during 1963 were probably given under somewhat less advantageous conditions than the tests administered in the schools during 1964. Secondly, the initial impact of the school experience was likely to be unusually beneficial to most of these children, and most descriptions of their behavior during the school year contained evidence of the high level of involvement of these students in the activities of the school.

There is also some evidence that the EDUCATION group gained more than the NO EDUCATION group. The divergent gains made by the NO DATA group which exceeded even the EDUCATION group are not easily explained, however, since the composition of this group is likely to be children who fit proportionately in the other two groups.

Table 5-9 is based on the largest sample sizes and is likely to be the best data available. It would appear that in the year following the Free School year (when the students returned to a usual school program) the changes were not so dramatic. For the most part, the achievement changes were less than .5 grade equivalent scores. There appears to have been more uniform shifts in the first three subtests which measure various vocabulary, reading and spelling skills than in grammar, and the arithmetic skills. The latter skills showed very little change during the 1964-1965 period but rather sharp changes during the 1963-1964 period. Strangely, arithmetic computation skills were measured lower in 1965 than in 1964.

With all subtests considered totally, there is very little evidence that the NO EDUCATION group failed to change as much during this period as the EDUCATION group. Except for one subtest, their gain scores were higher than the EDUCATION group and the NO DATA group.

Table 5-10 provides further evidence on changes. Over a two-year period, the average gains range from 1.21 to 2.45. They are inconsistent with Tables 5-8 and 5-9 especially on arithmetic computation where a lower two-year gain would be expected. It should be remembered, however, that the samples involved are only partially overlapping and that the data should be considered _en toto_.

The data in Table 5-10 give no indication that one group was clearly superior to any other and the NO EDUCATION group changed more than the EDUCATION group in three subtests or changed less in three others.

In summary, the evidence on achievement seems to indicate that:

A. The average achievement exhibited for all groups was still less than national norm groups of the same age with very young children being closer to the norms.

B. The changes in achievement during the Free School year were much higher than during the second year.

C. The children with intervening education did not change substantially more over the one- or two-year period than children who had a four-year school layoff, and, consequently, gaps in achievement levels for these two groups were neither lessened nor widened.

REFERENCE

Bloom, Benjamin S., Stability and Change in Human Characteristics, New York: John Wiley and Sons, Inc., 1964.

Chapter VI

THE EFFECT OF LACK OF FORMAL SCHOOLING ON NUMBER DEVELOPMENT: A TEST OF PIAGET'S THEORY AND METHODOLOGY*

The major objectives of this chapter's research were (1) to examine the effects of a period of non-schooling on attainment of the concept of conservation by Negro children, (2) to investigate differences between verbal and non-verbal assessments of ostensibly the same cognitive structure (i.e., the conservation of continuous substance), and (3) to assess the differential effects, if any, of systematically varying the types of questions utilized in verbal tests of conservation.

The school environment has generally been considered the major source of the child's number experiences. In school the child is taught to count, add, and is provided with many concrete applications of number. The absence of formal schooling would, then, tend to diminish the frequency and intensity of these number experiences. Formal number experiences, as measured by arithmetic achievement tests, correlate fairly well (r=.59) with success on Piagetian number tasks, according to Dodwell (1961). This suggests a positive relationship between success on Piagetian number tasks and formal academic achievement. If this inference is correct, we should expect children who have had formal schooling to be at a higher developmental level on Piagetian number tasks than children of the same age who have been deprived of schooling. On the other hand, if the inference is incorrect, we should expect no difference between children who have had formal schooling and children who have been deprived of schooling. The extent to which the absence of school experiences influences number development affords a partial test of Piaget's theory.

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*Dr. Egon Mermelstein of Hofstra University, with the assistance of Dr. Lee Shulman of Michigan State University, conducted the research in this chapter. The data analysis was an essential aspect of the former author's Ph.D. thesis.

The tasks selected for examining the effect of lack of formal schooling and the effect of various experimental procedures on number development are tests for the attainment of the concept of conservation of substance. Piaget's experiments for demonstrating whether or not a child has this concept are well known. Piaget maintains that the attainment of this concept is necessary for number work. This concept develops sequentially through a series of discrete stages. The role of formal academic training in accelerating or inhibiting this attainment is a major topic of this study.

Peel (1960) stresses the importance of play in intellectual growth. A child may acquire the concept of conservation of substance by playing frequently with such objects as water pails, milk bottles, grain feed, or an abacus. For him, the determining factors for acquiring the concept of the conservation of substance are the perceptible qualities of the objects and the amount of knowledge the child has about the objects. Lovell and Ogilvie (1961) support the claim that the determining factors in the acquisition of the concept of conservation of substance are the perceptible qualities of the object and the amount of knowledge had about the object.

The literature suggests that a wide range of experiences in play, school, etc. might facilitate the acquisition of conservation of substance. Duckworth (1964) interprets Piaget to indicate that altering a child's mental operation depends on a basic approach involving all of the child's activity. The foregoing implies that deprivation of a particular set of experiences, such as school, will not necessarily affect the acquisition of the concept of conservation of substance.

Wohlwill (1960) analyzes the attainment of the abstract concept of number and finds that specific related experiences (such as counting with numbers) have little relationship to the development of the concept of conservation, but that concept acquisition is related more to a child's cumulative general experience. Similarly, Hyde (1959), in her studies of conservation of number, also found no significant association between results on tests of conservation of substance and the number of terms spent by the subjects in school. Hyde suggests that although sampling may be partly responsible for these results, social and environmental factors other than schooling may play a larger part in success on these tests of conservation of substance than Piaget's theories lead one to expect. Smedslund's studies (1961a, 1961b, 1961c) on conservation of substance confirm Hyde's. They suggest that a child, regardless of his environment, cannot be taught the concept in question unless he has already attained a particular level of cognitive maturity. Finally, Piaget himself (1964) sees little sense in intensive training on conservation tasks. He believes that no significant learning will take place. Even if the child does manage to learn something about the situation, the learning is not likely to have a general effect on his level of understanding.

Language

Success, however, on the Piagetian tasks also appears to be influenced by language facility. Increased language facility, Peel (1960) maintains, suggests increased ability to communicate between the experimenter and the subject. One might reasonably expect children who attend school to manifest language facility superior to children of the same age who have not attended school, and thus perform in a superior manner on conservation tasks involving verbal communication between experimenter and subject. On the other hand, might the utilization of a non-verbal procedure mitigate against this difference?

According to Piaget, language is formulated from perceptions, i.e., perceptions precede language in development. Since language comes later in development than perception, it would be reasonable to assume that at any given moment during development, a child will be operating perceptually at a much higher level than he will be operating linguistically. Therefore, one might expect that young children's performances on non-verbal tasks will be categorized at a higher developmental level than performances on tasks requiring verbal communication.

Smedslund (1961c) implies the use of non-verbal cues, shock and surprise, may be used as indices of conservation of mass when he states that children who were non-conservers in the Piagetian sense were not shocked or surprised when the law of conservation was violated. Dixon (1949) takes surprise, confusion, and the spontaneous verbalizations of nursery school children as indicators of familiarity with an apparently contradicted size relationship. Dixon reports good agreement between two observers and two presentations of the task. In view of this, he suggests that contradiction of expectations provides another approach to studying children's unverbalized generalizations. Finally, Charlesworth (1964) advocates the use of the "surprise response" (apparent violations of laws governing reality) as an indicator of cognitive developmental level. Hence, these men appear to indicate the possibility of developing a reliable method of testing the concept of conservation non-verbally through use of phenomena designed to violate other expectations of subjects.

Techniques of Questioning

Criticisms have often been made of Piaget's clinical method of questioning subjects. Flavel (1963) maintains that Piaget's technique has more in common with diagnostic and therapeutic interviews and with projective testing than it does with the more widely used interview techniques in the behavioral sciences. Furthermore, Piaget seems to feel that only through such a method can one get to the heart of the child's cognitive structure and describe it as it really is. Flavell reports that Piaget freely admits the usefulness of more standardized procedures for a number of psychometric purposes. Yet, given the primary concern to describe and explain the variety of intellectual structures which children at different levels possess rather than to construct rigorous developmental scales for diagnostic purposes, Piaget believes the clinical method is the most appropriate technique.

Lovell (1961) combines the clinical approach with some degree of standardization in his questioning technique. On the other hand, Smedslund (1961a) stresses the standardized questions and minimizes the use of the clinical technique.

At this point, research appears equivocal as to the superiority of either the clinical or the standardized technique or some combination of them. Peel (1960) indicates that Piaget's findings concerning stages of development have repeatedly been confirmed. This may suggest that the questioning technique plays a relatively minor role in ascertaining whether a child has attained a particular concept.

Piaget's clinicial technique utilizes "rephrased" questions; that is, the same question may be put to a subject, not in a single standardized form, but in a series of varying forms in order best to communicate to the subject what the experimenter has in mind. Clearly, then, the question of which technique is most appropriate depends largely upon whether "rephrasing" of the question affects performance.

According to Piaget, in egocentric thought arguments seem convincing because the premises and conclusions are connected by schema; primitive structures which tie things together in terms of the needs and motives of the child. It is through schemas that the hunch leaps from a premise to a conclusion. Little value is attached to proving or checking conclusions. Because egocentric throught is essentially non-analytical, the result is that the child ignores isolated words and deals with whole sentences, understanding them or altering them as they stand, without analyzing them in detail. Furthermore, the child emphasizes events themselves rather than the relationships of time (order) or cause which unite them. The child's egocentricism induces him to believe that he understands everything and prevents him from understanding word for word the terms and propositions he hears. Instead of anaylzing what he hears in detail, he reasons about it as a whole. This syncretic nature of child thought suggests that questions which are nonidentical in specific words employed, but equivalent in their general content regarding specific tasks, will be perceived as identical.

Consider the following task: An experimenter presents a child with two containers of water, one long and narrow, the other short and stout. Three possible questions, of varying complexity, all emphasizing amount are:

1. "Is the amount of water the same, more, or less?"
2. "Does one glass have more water?"
3. "If you were thirsty, which glass would you drink?"

An examination of literature reveals that most experimenters have utilized one or more of these question types.

These three questions may be ordered as to their complexity. The first question involves a disjunctive relationship; the second a comparison; and the third a comparison related to a need.

All three questions emphasize amount or quantity. We may consider amount or quantity an event. The questions differ in the way they ask the child to relate to the event. If syncretic thought dominates the child's mental processes, he will attend to the event, but not to the relationships to the event. On the basis of this, one can expect that children, regardless of which of the questions is asked, so long as the events are the same, respond as if the questions are identical. For our purposes, we will define a question whose events are identical to other questions, but which calls for attention to different relationships, a "rephrased question."

The above considerations of the effects of non-schooling, the verbal component in conservation tasks, and the rephrasing of questions have generated the following research hypotheses for the present study.

A. On all five conservation tasks, there are no significant differences in the frequency of responses at any particular developmental level between Prince Edward County 6-year-olds and 6-year-olds from a community which experienced regular schooling.

B. On the non-verbal conservation task, there are no significant differences in the frequency of responses at any particular developmental level between Prince Edward County 9-year-olds who have experienced regular schooling.

C. On the four verbal conservation tasks, 9-year-olds who have experienced regular schooling make significantly more Stage Three responses than Prince Edward County 9-year-olds.

D. The proportion of subjects reaching Stage Three on the non-verbal task for conservation of continuous substances is significantly greater than the proportion of subjects reaching that stage for verbal tasks on the conservation of discontinuous substances. This prediction is directly at variance with Piaget's findings that the attainment of conservation of discontinuous substances is always developmentally prior to that of continuous substances.

E. Phrasing of the question does not affect the frequency of responses at any particular developmental level; thus, for any task, there will be no significant differences in scoring attributable to type of rephrased question asked.

Method

Subjects

In order to assess the effects of non-schooling (prior to re-schooling) on the attainment of the concept of conservation, a sample of sixty 6- and 9-year-old Negro children from Prince Edward County, Virginia, was selected for the study. A second sample of sixty 6- and 9-year-old Negro children who had experienced normal academic training was selected for comparison from a middle-sized Northern industrial city. Males and females were equally represented in each sample, as were 6- and 9-year-olds. A majority of the sample (50 percent to 75 percent) was from the NO EDUCATION group although both groups were represented in the selected sample.

Six-year-olds and nine-year-olds were selected because Piaget's writings indicate that, in general, most six-year-olds do not yet possess the concept of conservation of substance, while most nine-year-olds do possess this concept. Comparison of the two 6-year-old samples whose academic experiences were equivalent served as a check on possible effects of geography or urban-rural differences. Six- and nine-year-olds were operationally defined as between six and one-half and seven years, and nine and one-half and ten years (as of 1964), respectively.

Description of Tasks and Scoring

Task 1: The Conservation of Continuous Quantities: Non-Verbal

This experiment, dubbed "The Magic Experiment," consists of first allowing the child to satisfy himself that two 150 ml. beakers contain the same quantity of liquid; then pouring the contents of one of these small beakers into a 1000 ml. jar which it apparently fills. The child's comments and reactions are noted. The illusion is created by surreptitiously opening a valve connecting the empty 1000 ml. jar to one which is full and hidden behind a partition. The experimenter controls the rate at which the visible jar fills.

Scoring of Responses: Gestures of surprise, puzzlement, smile, "chee," "wow," etc., were scored at Stage Three. The absence of observable changes in behavior was scored at Stage One. Stage Two, or transitional responses, are very difficult to assess on a non-verbal task. Further, Piaget (1952) sometimes questions the universality of a transitional stage. Consequently, all responses were scored at Stage One, absence of the concept of conservation, or Stage Three, presence of the concept of conservation, on the "Magic Experiment" and the four standard Piagetian tasks.

Task 2: The Conservation of Continuous Quantities: Verbal

The child is shown two large containers of similar dimensions filled with an equal amount of liquid. He is allowed to satisfy himself that the amounts of the liquid are the same. The liquid is poured from one container into three smaller ones, and the child is then questioned about the equality of the two quantities as a result of this operation.

Task 3: The Conservation of Continuous Quantities: Verbal

The child is asked to tell the examiner when a graduated cylinder is filled with water to a 50 ml. line. Then, the water is poured into a 600 ml. beaker. He is again asked to declare when the graduated cylinder is filled to 50 ml. The water is now poured into a 100 ml. beaker. The child is then questioned about the equality of the two quantities as a result of the operation.

Task 4: The Conservation of Discontinuous Quantities and its Relation to One to One Correspondence: Verbal

A child is told to put gum balls into a container one by one; at the same time the experimenter is putting gum balls one by one into another container. The contents of one container are then poured into a long, narrow tube. The child is then asked whether the total quantities are the same.

Task 5: The Conservation of Discontinuous Quantities and its Relation to One to One Correspondence: Verbal

A child is told to put gum balls into a container one by one; at the same time the experimenter is putting gum balls one by one into another container. The contents of one container are then poured into three small containers. The child is asked whether the total quantities are the same.

Scoring of Responses: Tasks 2, 3, 4, and 5: The responses such as "the amounts are the same," "no difference," etc., were scored at Stage Three. Responses such as "no, the amounts are not the same, but if you pour the liquid back, they are the same," or "the same," when pouring the liquid into three glasses, were scored at Stage Two, and hence ignored. Other responses, such as "no one glass has more liquid," or "there is more in this glass," etc., were scored at Stage One. Any irrelevant responses such as, "Daddy says so," etc., were also scored at Stage One.

The reliability of the scoring procedures was tested by training a second rater and comparing scoring categories across raters. The percentage of agreement between raters was 90 percent.

Procedure

Each child was presented with Tasks 1-5. The sequence in which the experiments were administered was counterbalanced to control for any order effects. Five different sequences were utilized.

In order to study the effects of different types of questions on the response of subjects, three types of questions (A, B, and C) within each of the two major samples, were systematically employed.

Type A questions were:

> "Is the amount [number] of water [gum balls] the same, more, or less? Why do you think that?"

Type B questions were:

> "Does one glass have more water [gum balls]? Why do you think that?"

Type C questions were:

> "If you were thirsty, which glass would you drink? Why do you think that?" or
>
> "If you could have the gum balls to keep, which glass would you want?"

On Task 1, the non-verbal task, no questions of any kind were employed.

For any particular subject, a given type of question (A, B, or C) was consistently employed across all tasks. Hence, a subject asked a Type B question on Tasks 2 and 3 was also asked Type B questions on Tasks 4 and 5. An equal number of subjects, within each of the major samples, balanced for age and sex, was assigned to each question type.

A 2 X 2 X 2 X 3 X 5 design was used in the study. Within the design, the variables of age, sex, type of question, and sequence of tasks presented were balanced.

Results

Attempts to test hypotheses of "no difference" are replete with logical and statistical hazards. There are some who maintain that to demonstrate such a state is impossible. Others simply consider it extremely difficult. In presenting these results, it shall be understood that when the confirmation of a hypothesis of "no difference" is suggested, it is to be interpreted in the following way: The hypothesis that a significant difference is demonstrable in this given situation is significantly improbable. Although this is awkward language, it remains appropriate to the objectives of this research and to the demands of statistical theory. When the research hypothesis is, in fact, one of equality, it would seem quite inaccurate, if not dishonest, to couch it in terms of an inequality only for purposes of statistical expediency.

In testing hypotheses of no difference, we are primarily concerned with minimizing the likelihood of accepting this hypothesis when, in fact, there is a difference. In other words, we wish to minimize the probability of committing a Type II error. One way to minimize this probability is by fixing the alpha level of significance for hypothesis of no difference at .10. Fixing the level of significance at .10 rather than the normal .05 level for a fixed N and for a fixed alternative reduces the probability of commiting a Type II error. If, for this fixed alpha level of .10, we still have no reason to reject the hypothesis of no difference, the likelihood of rejecting a false hypothesis is improved. When testing hypotheses which predict differences, however, we return to the more commonly utilized .05 level of significance.

In most cases, since the data were clearly categorical, the Chi-square statistic was utilized. Under certain conditions, the appearance of empty categories led to the use of the binomial test for the significance of differences between proportions. The binomial test was also used to test Hypothesis D, which was stated in terms of the significance of differences between proportions.

We will now review the results of the study in terms of the hypotheses advanced.

Hypothesis A. On all five conservation tasks, there are no significant differences in the frequency of responses at any particular developmental level between Prince Edward County 6-year-olds and 6-year-olds from a community which experienced regular schooling.

Table 6-1 reports the results for this hypothesis. When the Chi-square test is used, it is based upon a 2 X 2 contingency table for the two groups of 6-year-olds and two levels of attainment on the task, Stage One and Stage Three. Because so few 6-year-olds in either group were able to reach Stage Three on Tasks 2, 3, and 5, the binomial test for the significance of the difference between the proportions of each group in Stage One was utilized.

Table 6-1

Chi-Square and Binomial Test Values With Corresponding Probability Levels For Prince Edward County, Virginia, 6-Year-Olds and 6-Year-Olds From A Community With Regular Schools on Tasks 1-5

Task	Test	P
1	$X^2 = 1.51^a$	.20
2	$Z = -.28$*	.75
3	$Z = .13$	.95
4	$X^2 = .49$	.50
5	$Z = -.53$	.59

[a] df = 1

*Two-tailed binomial test employed where the categories were empty.

An examination of the test values and their corresponding probability levels indicates that no difference reaches the .10 level of significance. Hence, there seems to be no evidence of any significant differences between 6-year-olds from Prince Edward County and 6-year-olds from the community which received regular schooling. Since these two groups of 6-year-olds were each in their first year of school at the time of the study, we may assume that the two groups of children may be considered as drawn from the same population for the five tasks utilized in this research.

Hypothesis B. On the non-verbal conservation task, there are no significant differences in the frequency of responses at any particular developmental level between Prince Edward County 9-year-olds who have experienced regular schooling.

Hypothesis C. On the four verbal conservation tasks, 9-year-olds who have experienced regular schooling make significantly more Stage Three responses than Prince Edward County 9-year-olds.

Table 6-2 reports the results relevant to Hypotheses B and C. Again, 2 X 2 contingency tables were utilized for the Chi-square test. It appears that while there is no reason to reject Hypothesis B, the results for Tasks 2 through 5 necessitate the rejection of Hypothesis C. There are no significant differences between the two groups for the verbal tasks of conservation.

Table 6-2

Chi-Square Values and Corresponding Probability Levels For Prince Edward County and Regularly Schooled 9-Year-Olds on Tasks 1-5

Task	Test	P
1	$X^2 = .00^a$	.99
2	$X^2 = 1.26$	.20
3	$X^2 = .00$	.99
4	$X^2 = .16$	.50
5	$X^2 = .35$	.50

[a] df = 1

Hypothesis D. The proportion of subjects reaching Stage Three on the non-verbal task for conservation of continuous substances is significantly greater than the proportion of subjects reaching that stage for verbal tasks on the conservation of discontinuous substances.

Table 6-3 presents the results for those 6-year-old and 9-year-old subjects that passed Task 1 only and Task 4 only. Passing Task 1 only means that a child is categorized in Stage Three on Task 1 and in Stage One on Task 4. A subject was considered to have passed Task 4 if he either passed Task 4 or Task 5. Task 4 responses were the combined results of the gum ball Tasks 4 and 5. On the other hand, passing Task 4 only means that a child is categorized in Stage Three on Task 4 and in Stage One on Task 1. Selection of subjects that passed Task 1 only and Task 4 only insured independence of tasks. Since the tasks were independent, the binomial test was employed. The results are presented in Table 6-3. They confirm the hypothesis for both 6- and 9-year-old subjects that the proportion of subjects passing Task 1 only is significantly greater than the proportion of subjects passing Task 4 only. Hence, we have evidence that a non-verbal task for conservation of continuous substances is passed by a greater proportion of subjects than pass a verbal task for conservation of discontinuous substances.

Table 6-3

Chi-Square Values and Corresponding Probability Levels for Effect of Questioning on Performance on Tasks 2, 3, 4, 5

Task	Test	P
2	$X^2 = .14^a$	.90
3	$X^2 = 1.09$	.50
4	$X^2 = 4.03$	.10
5	$X^2 = 3.28$	.10

[a] df = 2

Hypothesis E. Phrasing of the question does not affect the frequency of responses at any particular developmental level; thus, for any task, there will be no sifnificant differences in scoring attributable to type of rephrased question asked.

To test this hypothesis, 3 X 2 contingency tables were set up comparing the three types of phrasing of questions with number of subjects passing at Stage One and Stage Three respectively. The Chi-square test was utilized with two degrees of freedom. Table 6-4 presents the results of these analyses. The hypothesis of no difference must be rejected for the discontinuous tasks, 4 and 5. The effects of questioning on performance result in significant differences for these tasks. Tables 6-5 and 6-6 present the results for these two tasks. It is apparent that question Type C, that rephrased question which connects the perception of the conservation of the discontinuous substances with the needs of the subjects, is the question which generates the divergent results. The meaning of these findings will be discussed in the next section.

Table 6-4

Number of Subjects Passing Task 1 Only and Task 4 Only

	Passing Task 1 Only	Passing Task 4 Only	Total Passing One Task
6-Year-Olds	13	1	14
9-Year-Olds	13	3	16

Binomial Test, 6-year-olds: $P(X = 1) = .001$; Results significant at .01 level.

Binomial Test: $P(X = 3) = .011$; Results significant at .05 level.

Table 6-5

Type A, Type B, Type C Questions and Performance of Subjects on Task 4

	A	B	C	Total
Stage One	18	20	25	63
Stage Three	19	17	10	46
Total	37	37	35	109

X^2: $X^2 = 4.03$ with 2 df; $p = .10$. Results significant at .10 level.

Table 6-6

Type A, Type B, Type C Questions and
Performance of Subjects on Task 5

	A	B	C	Total
Stage One	21	20	28	69
Stage Three	18	15	10	43
Total	39	35	38	112

X^2: $X^2 = 3.28$ with 2 df; $p = .10$. Results significant at .10 level.

Table 6-7 reports the number of subjects categorized into each developmental stage on each task at each age. Stage Two responses are included in this table to give a fuller picture of the responses given, and to account for all the subjects. It appears from inspection of this table that the order of attainment of Stage Three for each of these tasks is as follows: Non-verbal continuous, verbal discontinuous, and verbal continuous. With the exception, therefore, of the unexpectedly early manifestation of attainment of the concept of conservation for the Magic Experiment, Piaget's results are replicated.

Table 6-7

Number of 6-Year-Olds and 9-Year-Olds Categorized Into Stages of Development on Tasks 1, 2, 3, 4 and 5

		Non-Verbal		Verbal		
		Continuous			Discontinuous	
		Task 1	Task 2	Task 3	Task 4	Task 5
6-Year-Olds	Stage One Absence of Conservation	40	53	56	50	52
	Stage Two Transition	5	1	0	0	2
	Stage Three Presence of Conservation	15	6	4	10	6
9-Year-Olds	Stage One Absence of Conservation	6	31	27	11	17
	Stage Two Transition	5	7	5	8	4
	Stage Three Presence of Conservation	49	22	28	41	39

Discussion

Failure to reject the hypothesis of no difference in performance between Prince Edward County 6-year-olds and their 6-year-old northern counterparts removes region as a variable. Consistent with the position espoused earlier, Prince Edward County 9-year-olds' performances were similar to regularly schooled 9-year-olds on the non-verbal task. However, on the verbal tasks, the hypothesis that schooled 9-year-olds perform at a higher level than Prince Edward County 9-year-olds is rejected.

Perhaps Prince Edward County children's eight months of formal schooling prior to our testing might provide one possible explanation for the results of no differences in performance among 9-year-old subjects. The difference in language facility between Prince Edward County and other children might have been reduced during this period. Yet, evidence elsewhere in this report indicates that even after some schooling, the I.Q. and achievement scores of the Prince Edward County children remains low. Thus, no dramatic improvement in language facility is apparent.

Perhaps the syncretic nature of child language, espoused earlier, offers another explanation for these results. If all 6- and 9-year-old children emphasize the events of questions rather than the relationships to the events, perhaps this may account for the similarity in performances of the Prince Edward County 9-year-olds and the schooled 9-year-olds. Conceivably, just as specific training in conservation tasks does not insure conservation (Sigel, 1964), so, too, specific training in language does not insure analytic understanding of these kinds of questions prior to 9 years of age. Indeed, certain types of questions at a particular age may be equally incomprehensible to all children regardless of their environment. The rejection of the hypothesis that, due to their academically enhanced language facility, the schooled sample is superior to the Prince Edward County sample on verbal tasks, seems to suggest that school experience affects number performance only minimally.

The findings confirm the hypothesis that the proportion of subjects passing Task 1 only, the non-verbal continuous task, is significantly greater than the proportion of subjects passing Task 4 only, the discontinuous task. Yet, according to the Piagetian literature, continuous conservation tasks involving language have a higher mean acquisition age than discontinuous conservation tasks involving language. Flavell (1963) and others have argued that the concept of conservation is sensitive to task variation. Piaget states that continuous tasks have a higher mean age of acquisition than discontinuous tasks. Since the Magic Experiment is a continuous task, clearly the lower mean age of acquisition cannot be accounted for in terms of the task. The evidence indicates that the absence or presence of language itself significantly affects performance. It should be pointed out that it is not the use of a particular linguistic approach, e.g., clinical or standardized whose importance is being pointed out presently, but the absence or presence of language itself. Clearly then, Piaget's clinical approach is deficient in the sense that it does not take into account the language variable. It is entirely possible then, that children who possess the concept of conservation, but cannot verbalize it, escape Piaget's detection.

Variations in question phrasing appear to influence significantly performance on certain number tasks. The hypothesis of no difference in performance is supported for the Piagetian continuous tasks (water tasks), but not for the Piagetian discontinuous tasks (gum ball tasks). One possible explanation for the difference in results on the continuous and discontinuous tasks may be that Type C questions, "if you could take the gum balls home, which one would you take?" did not stress the event "amount" alone, but rather some other or additional event such as color of gum balls or shape of gum balls in the glass. The present investigators feel that Type A and Type B questions stressed "amount" primarily and that the Type C questions stressed "amount" and/or color or shape of gum balls. Questions which stress more than one event may be defined as conveying "event ambiguity." Zimiles (1963) supports this when he maintains that one of the ambiguities inherent in verbal tasks is the inability of a verbal test or a question to delineate specifically the kind of response, spatial or numerical, that is desired.

If the data suggest that the type of question can affect performance, this implies a criticism of Piaget's techniques of assessment. In other words, acquisition of the concept of conservation of substances appears then to be sensitive to the manner in which the question is posed. However, inherent in these findings may be an affirmation of Piaget's clinical method of "rephrased questions."

It is conceivable that even if one question stresses two events, hence embodies "event ambiguity," other questions would stress the event in question alone and minimize the possibility of confusion of events. In other words, the employment of many "rephrased" questions may help to reduce the ambiguity of a particular question. Piaget implies this when he states that only through such a method can one get to the child's cognitive structure and describe it as it really is. The standardized questioning approach, because of its inflexibility, may not reduce the possibility of confusion of events.

In conclusion, the findings of this research confirm that the absence of formal schooling had no demonstrable effect on children's performance on number development tasks for the EDUCATION and NO EDUCATION groups as a whole. In addition, they raise questions about Piaget's research methods that require additional research for their answers. They suggest that the absence or presence of language itself must be viewed as a significant variable in research of this kind. In addition, the differential results from contrasting methods of questioning must also undergo additional investigation. These findings suggest that a complex relationship may exist between types of tasks and kinds of questions.

REFERENCES

Charlesworth, William R., "Development and Assessment of Cognitive Structures," in Richard Ripple and Verne N. Rockcastle (eds.), Piaget Rediscovered: A Report on Cognitive Studies and Curriculum Development, Cornell University, School of Education, 1964, 85-91.

Dixon, J. C., "Concept Formation and Emergence of Contradictory Relations," Journal of Experimental Psychology, 1949, 39, 144-149.

Dodwell, P. C., "Children's Understanding of Number Concepts: Characteristics of an Individual and of a Group Test," Canadian Journal of Psychology, 1961, 15, 29-36.

Duckworth, Eleanor, "Piaget Rediscovered," in Richard Ripple and Verne N. Rockcastle (eds.), Piaget Rediscovered: A Report on Cognitive Studies and Curriculum Development, Cornell University, School of Education, 1964, 1-5.

Flavell, John H., The Developmental Psychology of Jean Piaget, New York: Van Nostrand, 1963.

Green, Robert L., Hofmann, Louis J., Morse, Richard J., Hayes, Marilyn E., and Morgan, Robert F., The Educational Status of Children in a District Without Public Schools, Cooperative Research Project No. 2321, Department of Health, Education and Welfare, United States Office of Education, 1964.

Hyde, D. M., An Investigation of Piaget's Theories of the Development of the Concept of Number, abstract - unpublished Ph.D. thesis, London University, 1959.

Lovell, K., The Growth of Basic Mathematical and Scientific Concepts in Children, New York: Philosophical Library, 1961.

Lovell, K., and Ogilvie, E., "A Study of the Conservation of Weight in the Junior School Child," British Journal of Educational Psychology, 1961, 31, 138-144.

Peel, E. A., The Pupil's Thinking, London: Oldbourne, 1960.

Piaget, J., The Child's Conception of Number, London: Routledge and Kegan Paul Ltd., 1952.

Piaget, J., The Language and Thought of the Child, New York: Meridian, 1955.

Piaget, J., "Development and Learning," in Richard Ripple and Verne N. Rockcastle (eds.), Piaget Rediscovered: A Report on Cognitive Studies and Curriculum Development, Cornell University, School of Education, 1964, 7-20.

Sigel, I., "The Attainment of Concepts in Children," in Hoffman and Hoffman (eds.), Review of Child Development Research, Vol. I, New York: Russell Sage Foundation, 1964.

Smedslund, J., "The Acquisition of Conservation of Substance and Weight in Children, I, Introduction," Scandinavian Journal of Psychology, 1961a, 2, 11-20.

Smedslund, J., "The Acquisition of Conservation of Substance and Weight in Children, II, External Reinforcement of Conservation of Weight and of the Operations of Addition and Subtraction," Scandinavian Journal of Psychology, 1961b, 2, 71-84.

Smedslund, J., "The Acquisition of Conservation of Substance and Weight in Children, III, Extinction of Conservation of Weight Acquired 'Normally' and by Means of Empirical Controls on a Balance Scale," Scandinavian Journal of Psychology, 1961c, 2, 85-87.

Wohlwill, J. F., "A Study of the Development of the Number Concept by Scalogram Analysis," Journal of Genetic Psychology, 1960, 97, 345-377.

Wohlwill, J. F., and Lowe, R. C., "An Experimental Analysis of the Development of the Conservation of Number," Child Development, 1962, 33, 153-167.

Zimiles, Herbert, "A Note on Piaget's Concept of Conservation," Child Development, 1963, 34, 691-695.

Chapter VII

ASPIRATIONS, SELF-CONCEPTS, AND ATTITUDES TOWARD SCHOOL

Educational and Occupational Aspirations

The effects of severe school deprivation upon levels of educational and occupational aspiration were investigated in the previous study (Green, _et_ _al_., 1964). It was found that Negro children who attended schools outside Prince Edward County one or more years during the four-year school closure expressed higher levels of educational and occupational aspiration than those who received no formal education during that period. It was assumed that children who attended schools outside of the County, as a result of the school experience, possessed greater awareness of the educational and occupational structures of American society and the relationship between the two. On the other hand, it was assumed that those children who were completely deprived of schooling expressed levels of aspiration commensurate to those circumstances. This line of reasoning led to the over-all conclusion that severe school deprivation in Prince Edward County arrested the development of high levels of educational and occupational aspiration among affected Negro children (Green, _et_ _al_., 1964).

While careful perusal of existing literature revealed no studies that demonstrated a relationship between educational and occupational awareness and levels of aspiration, two studies were found that suggested the tenability of such a relationship. Amos (1960) attempted to determine the awareness of a selected group of ninth-grade Negro students regarding the occupational opportunities within their local area (a segregated area in Virginia) and within the

United States as a whole. He found that girls were more aware of the occupational situation as it existed for Negroes than were boys; that both sexes were more conscious of the opportunities for their race on a nationwide scale than on the local level; more importantly, that both boys and girls, as a group, were insufficiently aware of the number of Negroes employed within various occupations.

Drabick (1965), in a study of student aspirations in eleven North Carolina Negro high schools, found that the occupational aspirations of many of the students were quite low. He reported that only half of his subjects desired occupations above the prestige level of 60 on the North-Hatt scale, the score that serves as a dividing line between the professional and nonprofessional occupations. Drabick reported, "relatively few of the subjects expressed even a 'desire' for occupations in the highest prestige ranges." Drabick saw in these data the need for machinery, equipment, and competently trained teachers to implement an emphasis upon balanced vocational education among the students he studied.

The question of what the effects of one year of schooling were, after four years of school deprivation, on the levels of educational and occupational aspiration of Prince Edward County Negro children was explored in the following analysis. Having postulated that levels of educational and occupational aspiration are, in part, a function of schooling, it was hypothesized that levels of both educational and occupational aspiration would change significantly in the positive direction among the EDUCATION and NO EDUCATION groups alike. But, because the potential for gains in educational and occupational awareness was assumed greater among the NO EDUCATION group, it was thus hypothesized that greater gains in levels of educational and occupational aspiration would be experienced by that group.

Methods and Procedures

A group of pupils from the Prince Edward County Free Schools, between 11 and 19 years of age, constituted the sample for this analysis. The sample was composed of twenty-five girls and thirty-three boys. Thirty-two of the subjects (19 girls and 13 boys) were of the EDUCATION group; and twenty-six of the subjects (13 boys and 13 girls) were of the NO EDUCATION group.

Data regarding levels of educational and occupational aspiration were gathered during the summer of 1963 and, again, during the summer of 1964. All of the subjects included in the analysis completed one year of school in the Prince Edward County Free Schools during the interim. Levels of educational aspiration were obtained from responses to the question, "If you were absolutely free to go as far in school as you wanted, how far would you like to go?" Pupils were instructed to check one of six responses which most closely expressed their wish. The possible responses formed a six-point continuum from low to high as follows: (1) less than high school, (2) high school graduation, (3) high school graduation plus special training (e.g., trade school), (4) some college but not college graduation, (5) college graduation, and (6) beyond college (graduate or professional school).

Levels of occupational aspiration were determined from responses to the question, "If you were free to go into any kind of work you wanted, what kind of job would you most like to have?" Occupations indicated by the pupils were assigned socio-economic ratings from the Duncan Socio-Economic Index for All Occupations (Duncan, 1961). Several occupational responses not included in the Duncan Index were assigned ratings on the index on the basis of their similarity to occupations that were included.

The statistical test employed to assess changes in levels of educational and occupational aspiration was the Wilcoxon Matched-Pairs Signed-Ranks Test (Siegel, 1956).

Results and Discussion

The first hypothesis, relating to levels of educational aspiration, predicted significant changes in the positive direction among both the EDUCATION and NO EDUCATION groups. That prediction received overwhelming support. The second hypothesis, that greater gains in levels of educational aspiration would be experienced by the NO EDUCATION group, also received substantial support. Median changes in levels of educational aspiration for the EDUCATION and NO EDUCATION groups are presented in Table 7-1.

Table 7-1

Median Changes in Levels of Educational Aspiration

	N	Median Levels of Educational Aspiration		d
		1964	1964	
NO EDUCATION Group	26	1.62	5.46	3.84
EDUCATION Group				
One Year	9	1.70	5.50	3.80
Two Years	10	2.00	5.00	3.00
Three Years	8	2.00	4.75	2.75
Four Years	5	3.16	5.43	2.27

Figure 5 graphically illustrates these changes in levels of educational aspiration. The lines of Figure 5 indicate that, while all of the groups changed significantly, the greatest change in level of educational aspiration

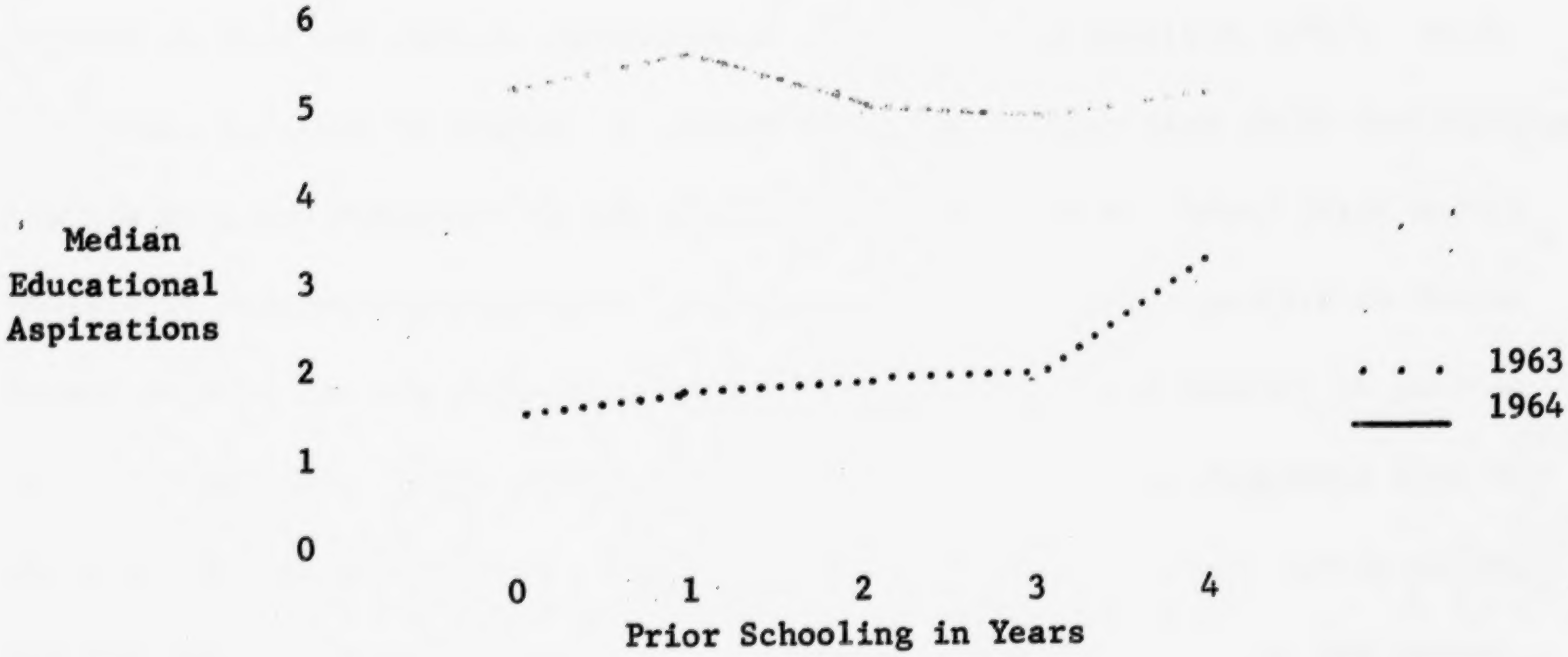

Figure 5. Changes in Levels of Educational Aspiration by Prior Schooling

occurred among the NO EDUCATION group, pupils who received no formal education during the four-year school closure in Prince Edward County.

Beginning with one year of school outside the County during the school closure, the two lines of Figure 5 begin to merge, indicating that gains in levels of educational aspiration declined as years of school outside of the County increased. Application of the Wilcoxon Matched-Pairs Signed-Ranks Test revealed that these results are highly significant (z=6.18, p .00003).

These findings, coupled with previous findings (Green, et al., 1964, pp. 175-176) lend substantial support to the argument that levels of educational aspiration are partly a function of schooling, particularly among culturally disadvantaged children. The subculture to which these children belong lacks much of the educational sophistication that is characteristic of the middle class in American society. Middle-class parents, because of their own college experience and various positions in the community, have a better understanding of the educational process, where to get information, with whom to speak in the academic bureaucracy, and how to fill out various applications (Brookover and Gottlieb, 1963). Such knowledge, it could be argued, is passed on to the middle-class child facilitating his planning and execution of his educational preparedness. Lower class and/or culturally disadvantaged parents, including many of the Negro parents in Prince Edward County, did not possess sufficient educational sophistication to pass on to their children. Their children, therefore, were very much dependent upon the schools for such information. They encountered their educational models within the framework of the school: in their studies, through speakers at the school, and through the exchange of experience with their peers. School field trips to various business and industrial concerns provide these pupils with greater awareness of the educational and occupational world; they stimulate questions regarding the amount and types of education needed to obtain various occupations. In short, the culturally disadvantaged child, in order to rise above his inherited social status, must seek and find educational and occupational models outside of his own social class and family milieu. The schools usually provide this necessary extension of the social class and settings of the culturally deprived child.

It was hypothesized that levels of occupational aspiration would change significantly in the positive direction among both the EDUCATION and NO EDUCATION groups. It was further hypothesized that greater changes in levels of occupational aspiration would be manifested among the NO EDUCATION group. The rationale underlying these hypotheses was the same as the above, regarding educational aspirations. The first hypothesis received only partial support. The second hypothesis, that greater gains in levels of occupational aspiration would be manifested among the NO EDUCATION group, was not supported. Median changes in levels of occupational aspiration for the EDUCATION and NO EDUCATION groups are presented in Table 7-2.

Table 7-2

Median Changes in Levels of Occupational Aspiration

	N	Median Levels of Occupational Aspiration 1963	1964	d
NO EDUCATION Group	26	4.25	5.00	.75
EDUCATION Group				
One Year	9	4.50	4.50	.00
Two Years	10	7.00	6.50	- .50
Three Years	8	6.25	6.50	.25
Four Years	5	4.50	7.50	3.00

Figure 6 more clearly demonstrates the changes in levels of occupational aspiration. The figure indicates gains among the NO EDUCATION group and among those of the EDUCATION group who completed three and four years of school during the school closure. Pupils who completed only one year of school during that period failed to gain in levels of occupational aspiration, and those who completed two years of school during the school closure decreased their levels of occupational aspiration. Contrary to our second hypothesis, the greatest change in levels of occupational aspiration occurred among pupils who had completed four years of schooling during the school closure. The results regarding levels of occupational aspiration were significant ($z=1.57$, $p < .05$), indicating support for the hypothesis that both education groups would improve. As illustrated in Figure 6, differences apparently stemmed from the zero and four year groups. There was no support, however, for the second hypothesis that greater gains in levels of occupational aspiration would be manifested among the NO EDUCATION group.

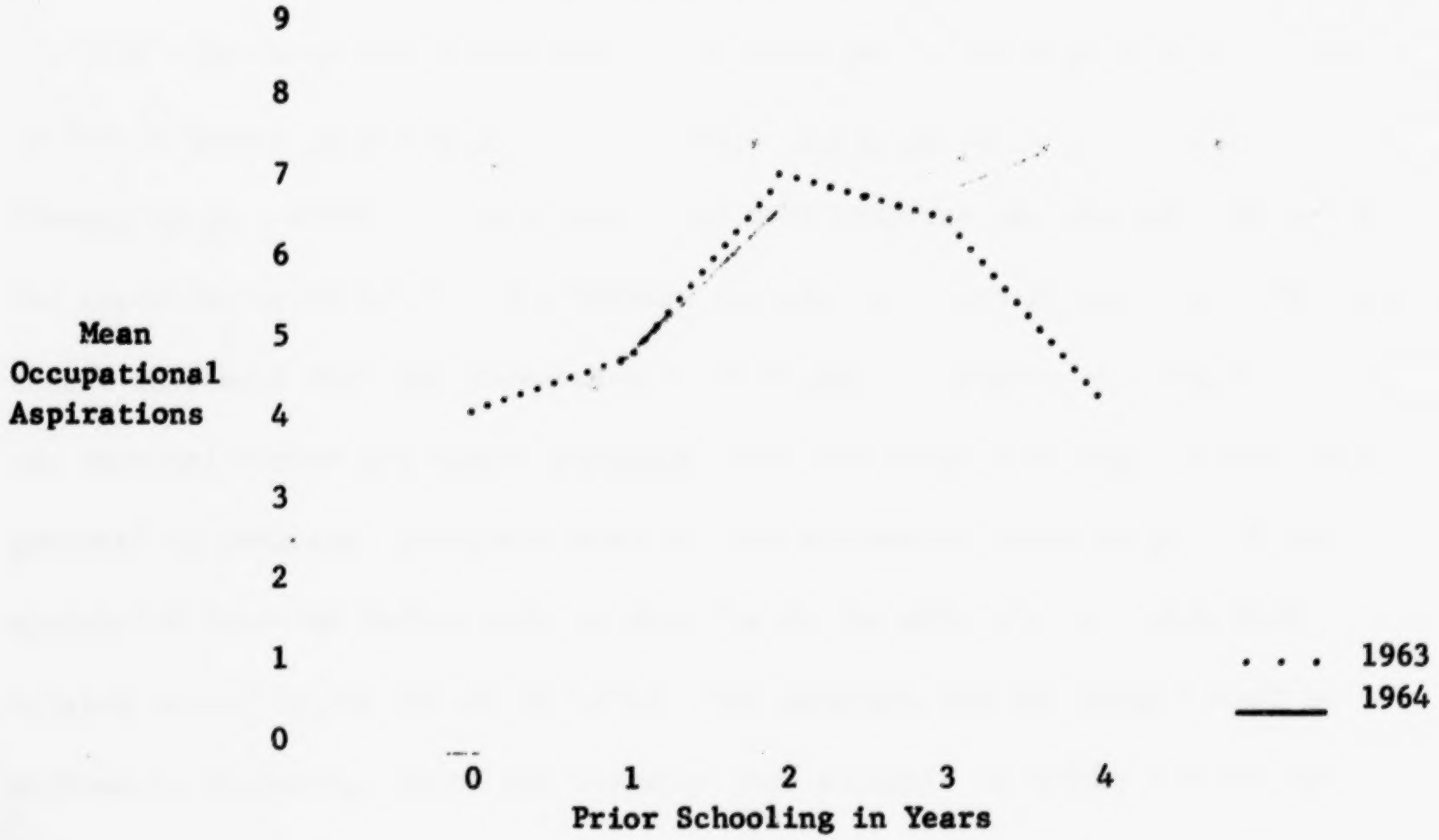

Figure 6. Changes in Levels of Occupational Aspiration by Prior Schooling

Summary

The findings in this section regarding educational and occupational aspirations suggest that levels of educational and occupational aspirations are related to schooling among disadvantaged children. While both the EDUCATION and NO EDUCATION groups made significant and positive changes in educational aspirations, the greatest change occurred within the school-deprived group. Changes in occupational aspirations were made in the positive directions by both the school and school-deprived pupils.

Summer Crash Program Attendance:
Developed Levels of Educational and Occupational Aspiration and Self-Concepts of Ability

The effects of the summer and winter programs on the cognitive development of Prince Edward County Negro children were investigated in the previous study (Green, et al., 1964). It was found that both programs had minimal effects on the readiness level of children between six and ten years of age; that readiness scores increased with age independently of school attendance or attendance at the informal winter and summer programs; that the effects of the programs were greatest in language, paragraph meaning, and arithmetic computation. It was postulated that the latter effects were due to the more directly schooling-related nature of the skills involved. The programs had the least effect on arithmetic reasoning, which was probably less amenable to direct instruction.

The effects of the summer crash programs on later levels of educational and occupational aspiration and self-concept of ability were investigated in this current analysis. The summer crash programs were selected for further analysis because, although shorter in duration, they were the more professionally oriented of the informal programs. They were staffed by professional teachers from various sections of the country who were free to donate their time during the summer months. Another consideration in the selection of the summer crash programs for analysis was that a comparison of achievement test scores between attenders of the summer and winter programs showed the summer programs to be superior (Green, et al., 1964).

Method

The analysis of educational aspirations was based on responses from 39 children of the NO EDUCATION group who attended the summer crash programs for one or more years and 41 children of the NO EDUCATION group who did not attend the summer crash programs. There were 16 males and 23 females in the former group with 18 males and 23 females in the latter group. The children in both groups were between 11 and 19 years of age. It was decided to eliminate from this analysis all children from the EDUCATION group. This was done in order to separate the actual effects of the summer crash programs, if any, from any contamination of such effects by the attendance at regular schools.

Levels of educational aspiration were obtained from responses to a questionnaire item that asked the subjects to indicate how many years of school they would like to complete. These responses were dichotomized into categories of low and high levels of educational aspiration, employing the median as the cutting point.

Thirty-five children of the NO EDUCATION group who attended the summer crash programs, for one or more years, and 34 children of the NO EDUCATION group who did not attend the summer crash programs constituted the sample for the analysis of levels of occupational aspiration. There were 12 males and 23 females in the former group, with 12 males and 22 females in the latter group. The students in both groups were between the ages of 11 and 19.

Levels of occupational aspiration were assessed with responses to a questionnaire item that asked the children to state what occupation they would most like to follow. Occupations indicated by the children were assigned socio-economic ratings from the "Duncan Socio-Economic Index for All Occupations" (Duncan, 1961). Several occupations not included in the Duncan Index were assigned ratings on the basis of their similarity to occupations that were included. The responses were then dichotomized into categories of low and high, employing the rating of the median response as the cutting point.

Results and Discussion

It was postulated that the summer crash programs might have helped to maintain morale among attenders; that the attenders might have been better able to sustain contact with the ideals and goals of education, becoming less discouraged in their outlooks and hopes regarding future education and occupations. It was also felt that the attenders of the summer crash programs would express significantly higher levels of educational and occupational aspiration than non-attenders. This hypothesis proved untenable. Table 7-3 shows no significant relationship between summer crash program attendance and levels of educational or occupational aspiration.

Table 7-3

Relationship of Summer Crash Program Attendance
To Levels of Educational and Occupational Aspiration

	Summer Crash Program Attendance			
	Attended	Did Not Attend	X^2	p Level
Level of Educational Aspiration	(N=39)	(N=41)		
High	64%	59%	0.16	.45
Low	36%	41%		
Level of Occupational Aspiration	(N=35)	(N=34)		
High	49%	41%	0.14	.45
Low	51%	59%		

How may these findings be accounted for? As all of the children included in this analysis had completed one year of schooling in the Prince Edward County Free Schools at the time the data were gathered, that experience might have nullified whatever influence the summer crash programs had. Elsewhere in this report (in the analysis of changes in levels of educational and occupational aspiration after one year of schooling), it was found that members of the NO EDUCATION group experienced greater gains in levels of educational aspiration than members of the EDUCATION group. But there was no significant difference between the two groups in changes in levels of occupational aspiration.

Summary

This overall analysis showed no significant change in levels of occupational aspiration for either group. It therefore seems probable that the one year of schooling might have been a contaminating factor in the above relationship of summer crash program attendance to levels of educational aspiration.

Academic Self-Concept, Intelligence, and Achievement

There is a proliferating body of literature bearing on the influence of factors other than scholastic aptitude and intelligence upon school achievement. A portion of this literature has to do with the identification of students' self-concepts as learners and the relation of such self-concepts to classroom achievement. Roth (1959), for example, investigated the relationship between self-concept and reading improvement in a college reading improvement program. He hypothesized that there would be significant differences in the self-concepts of students who improved, did not improve, and dropped out of the program. The data obtained supported the hypothesis.

Bodwin (1957) investigated the relationship between "immature" self-concept--which he defined in terms of lack of "self-confidence, freedom to express appropriate feelings, liking oneself, satisfaction with one's attainments, and feelings of personal appreciation by others"--and certain educational disabilities, mainly reading and arithmetic. Bodwin reported the following findings:

1. A significant, positive relationship between immature self-concept and reading disability ($r = .72$ on the third-grade level and $r = .62$ on the sixth-grade level).
2. A significant, positive relationship between immature self-concept and arithmetic disability ($r = .72$ on the third-grade level and $r = .68$ on the sixth-grade level).
3. Greater relationships between immature self-concept and reading and arithmetic disability than between immature self-concept and disability in other school subjects.

Further evidence in support of the relationship between self-concept and school achievement was reported by Brookover and his co-workers (1962) who examined the relationship between the expectations held by significant others as perceived by Caucasian junior high school pupils in a large Midwestern school system and the pupils' academic self-concepts of their ability and their school achievement. Among other findings, it was reported that:

1. Self-concept of ability was significantly related to the school achievement of both boys and girls. The product-moment correlation was .57 for each sex.
2. Self-concept of ability was significantly related to the pupils' school achievement even when measured intelligence was controlled. The product-moment correlations, with measured intelligence partialled out, were .42 for boys and .39 for girls.
3. High achieving groups had significantly higher mean self-concepts of ability than low achieving groups with comparable measured intelligence.

Morse (1963) replicated the findings of the Brookover study with an eighth-grade sample of Negro pupils from the same school system and compared the results obtained to those obtained with the Caucasian sample. While Brookover and his co-workers' findings were corroborated by the Negro sample, the comparison showed that intelligence was a significantly better predictor of classroom achievement among the Caucasian pupils than among the Negro pupils.

The foregoing studies indicated substantial support for the relationship between self-concept of ability and school achievement. While the investigators did not have sufficient data to ascertain the relationship between self-concept and achievement scores in the 1964 study, an attempt was made to assess the pupils' self-concepts as learners. Green, _et al._, (1964) tested a sample of Prince Edward

County Negro pupils between the ages of 12 and 14 on a scale developed and pretested at Michigan State University (Brookover, et al., 1962) finding them not to differ in their self-concepts of ability from a similar sample of pupils in a neighboring Virginia county. In turn, the two Virginia samples were compared to a Michigan sample of Negro pupils of similar ages. Again, no significant differences were found. However, there was a tremendous and highly significant difference between the variances of the Michigan sample and the two Virginia samples, with the Virginia samples varying over ten times as much as the Michigan sample when standard deviations were compared. That, of course, indicated that the Michigan pupils were more homogeneous in their self-concepts than the Virginia pupils.

In the current investigation, an attempt was made to expand the previous findings regarding the self-concepts of Prince Edward County Negro pupils by investigating two relevant additional questions: What is the relationship of the self-concepts of Prince Edward County Negro pupils to their educational achievement? Are the self-concepts of pupils who did not attend school during the four-year school closure different from those of pupils who had no school lay-off? As in previous sections, the former group was called the NO EDUCATION group and the latter was called the EDUCATION group.

The theoretical framework underlying this analysis was drawn from the perceptual approach to individual behavior as expounded by Combs and Snygg (1959), and the symbolic interactionist approach to social psychology, first enunciated in the writings of Cooley (1902), Dewey (1930), and Mead (1934), and further elaborated by later scholars. Brookover (1959) was perhaps the first to suggest the applicability of these notions in the prediction and/or explanation of classroom achievement.

The framework attempts to explain human behavior in terms of how things seem to the individual. It focuses upon the more conscious aspects of human behavior and relates them to the individual's participation in group life. What governs human behavior, from this perspective, is the individual's unique perceptions of himself and the world in which he lives, the meaning things have for him. Human behavior, then, is viewed as a process in which the person shapes and controls his behavior by taking into account (through processes such as "role-taking") what he perceives as the expectations of him held by significant others with whom he interacts. In this framework it is assumed that the child learns what he perceives he is capable of learning. It is further assumed that his self-perception (or self-concept) with regard to learning is acquired through interaction with significant other persons who hold expectations of him as a school learner.

Drawing from this theoretical framework, the general hypothesis advanced and tested in this analysis was that self-concept of ability is a functionally limiting factor in school achievement for the Prince Edward County children.

Procedure

A selected group of eighth-grade pupils in attendance at the Prince Edward County Free Schools constituted the sample for this analysis. The sample was composed of 35 males and 53 females. Twenty-one males and 37 females were of the EDUCATION group; 14 males and 16 females were of the NO EDUCATION group.

Self-concept of ability (SCA) was measured with an eight-item, fixed-alternative scale designed to measure self-concepts of ability in academic endeavor (Brookover, et al., 1962). While the SCA scale was not pretested with Prince Edward County subjects, it was found, on a pretest with 513 male and 537 female Midwestern pupils, to form Guttman scales with reproducibilities of .95 for males and .96 for females. The reliabilities of the scale as determined by Hoyt's method was .82 for males and .77 for females. The SCA scale was administered to the Prince Edward County sample during the summer of 1964.

Intelligence (I.Q.) was assessed with the Chicago Non-Verbal Examination. The reliability of the test for verbal directions was reported in the test manual, as determined by both the split-half and test-retest methods. The correlation between the odd and even tests for a group of 334 children, ages 8 to 13 inclusive, when corrected by the Spearman-Brown formula was .89. The test-retest reliability on a group of 71 children in grades 4B and 5A was .80. The Chicago Non-Verbal Examination was administered to the Prince Edward County sample during the spring of 1964.

School achievement was measured with the Stanford Achievement Test (SAT), Elementary Battery, instead of school grades, since the Prince Edward County Free School System was ungraded. The SAT was administered to the Prince Edward County sample during the spring of 1964. The grade equivalent scores achieved on the subtests of the SAT constituted the measure of the subjects' achievement in the respective subject-matter areas.

Six specific hypotheses were derived to test the general hypothesis that self-concept of ability is a functionally limiting factor in school achievement. They were as follows:

1. The SCA scores of Prince Edward County Negro pupils are significantly related to their paragraph meaning subtest scores on the SAT when I.Q. is controlled.
2. The SCA scores of Prince Edward County Negro students are significantly

related to their word meaning subtest scores on the SAT when I.Q. is controlled.

Similar specific hypotheses were derived and tested regarding the remaining four subtests of the SAT: spelling, language, arithmetic reasoning, and arithmetic computation.

Several conventional statistical tests were employed in this analysis. Correlational analysis (product-moment) was the principal technique employed to test the six specific hypotheses. The .05 level of probability was employed as the criterion for acceptance or rejection of the null hypotheses.

Results and Discussion

The coefficients of correlation between SCA and achievement on the six subtests of the SAT are presented in Table 7-4 with and without the effect of I.Q. controlled. The crucial tests of the six specific hypotheses lie in the relative magnitudes of the two sets of correlation coefficients between SCA and the several subtests of the SAT, with and without the effect of I.Q. controlled. The table shows that even with the effect of I.Q. controlled, the coefficients of correlation between SCA and five of the achievement variables were positive and significant, indicating support for five of the six specific hypotheses. The hypothesis predicting a significant relationship between SCA and language achievement with I.Q. controlled was not supported.

Table 7-4

Coefficients of Correlation between SCA and Subtests of the SAT

Variables Correlated	Coefficients of Correlation	
	Controlling I.Q.	Not Controlling I.Q.
Paragraph Meaning - SCA	.32*	.35*
Word Meaning - SCA	.29*	.34*
Spelling - SCA	.26*	.31*
Language - SCA	.13	.20*
Arithmetic Reasoning - SCA	.26*	.31*
Arithmetic Computation - SCA	.32*	.36*

*p .05

Comparable data, employing I.Q. as the independent variable and SCA as the control variable, are presented in Table 7-5. These data indicate that I.Q. accounted for greater variation in the achievement scores of these students than SCA. But a considerably lower coefficient of correlation ($r = .18$, $p < .05$) between I.Q. and SCA indicated very little overlap between SCA and I.Q., and, thus, strengthened the argument that SCA is an independent predictor of achievement among these Negro pupils.

When the partial coefficients of correlation between I.Q. and the six achievement variables (with the effect of SCA controlled) were compared to the multiple correlation coefficients of I.Q. and SCA with the achievement variables, the magnitudes of the coefficients of correlation increased (Table 7-6). These increases in the amount of variation explained in the dependent variable

Table 7-5

Coefficients of Correlation Between I.Q. and Subtests of the SAT

Variables Correlated	Coefficients of Correlation*	
	Controlling SCA	Not Controlling SCA
Paragraph Meaning - I.Q.	.65	.66
Word Meaning - I.Q.	.56	.58
Spelling - I.Q.	.45	.48
Language - I.Q.	.45	.47
Arithmetic Reasoning - I.Q.	.57	.58
Arithmetic Computation - I.Q.	.48	.50

*All of the coefficients of correlation are significant at or less than the .05 level.

(achievement) by adding SCA as a second independent variable were evaluated by testing the significance of the regression coefficients of SCA in the multiple correlations.

Five of the regression coefficients were significant beyond the .05 level (see Table 7-7). The regression coefficient of SCA in the multiple correlation with I.Q. and language was not significant.

The mean self-concepts of academic ability of the EDUCATION and NO EDUCATION groups and the "t" test of the difference between those means are presented in Table 7-8. The "t" test, as indicated in the table, showed that there was no significant difference between the two group means.

Table 7-6

Comparison of the Partial and Multiple Coefficients of Correlation

Variables Correlated	Coefficients of Correlation* Partials: SCA Controlled	 Multiples: No Variable Controlled
I.Q., SCA, and Paragraph Meaning	.65	.70
I.Q., SCA, and Word Meaning	.56	.63
I.Q., SCA, and Spelling	.45	.53
I.Q., SCA, and Language	.45	.49
I.Q., SCA, and Arithmetic Reasoning	.57	.62
I.Q., SCA, and Arithmetic Computation	.48	.57

*All of the coefficients of correlation are significant at or less than the .05 level.

Table 7-7

Regression Coefficients of SCA in the Multiple Coefficients of Correlation

Variables in the Multiple Correlations	Regression Coefficients of SCA	t	$P <$
I.Q., SCA, and Paragraph Meaning	1.26	3.12	.01
I.Q., SCA, and Word Meaning	1.26	2.83	.01
I.Q., SCA, and Spelling	1.24	2.46	.02
I.Q., SCA, and Language	0.80	1.21	.30
I.Q., SCA, and Arithmetic Reasoning	0.91	2.46	.02
I.Q., SCA, and Arithmetic Computation	1.39	3.10	.01

Table 7-8

Comparison of the Mean Self-Concepts of Academic Ability
Of the EDUCATION and NO EDUCATION Groups

Group	Mean	S.D.	t
EDUCATION Group	28.62	4.89	0.95*
NO EDUCATION Group	27.63	4.05	

*df = 86, p [illegible] .05

Summary

The objective of this analysis was to answer two questions: (1) What is the relationship of the self-concepts of Prince Edward County Negro pupils to their educational achievement? and (2) Are the self-concepts of pupils who did not attend school during the four-year school closure different from those of pupils who had no school lay-off? The general hypothesis advanced in this analysis, tested in the form of six specific hypotheses, was drawn from the symbolic interactionist theory of human behavior. This theory includes self-concept of ability as a functionally limiting or facilitating factor in school achievement. Each of the specific hypotheses was proposed to determine the relation between self-concept and achievement in a specific area. The specific areas of achievement consisted of the six subtests of the Stanford Achievement Test.

Analysis of the data showed that, even with the effect of intelligence controlled, the coefficients of correlation between self-concept of ability and five of the achievement variables were significantly positive. Five of the six specific hypotheses were supported. The hypothesis predicting a significant relation between self-concept of ability and language achievement (with intelligence controlled) was not supported.

It may therefore be concluded that self-concept of ability was a functionally limiting factor in school achievement among Prince Edward County Negro children in the areas of paragraph meaning, word meaning, spelling, arithmetic reasoning, and arithmetic computation. Self-concept of ability had little or no bearing upon language achievement among the Prince Edward County Negro children.

Comparable data, employing intelligence as the independent variable and self-concept as the control variable, indicated that intelligence accounts for greater variation in school achievement among Prince Edward County Negro children than self-concept of ability. But the coefficient of correlation between self-concept of ability and intelligence was negligible. This showed further support for the conclusion that self-concept of ability is an independent predictor of achievement in the several areas mentioned above.

Further support for the above conclusions was obtained by testing the significance of the regression coefficients of self-concept of ability in the multiple correlations. The regression coefficients in five areas (paragraph meaning, word meaning, spelling, arithmetic reasoning, and arithmetic computation) were significant. The regression coefficient of self-concept of ability in the multiple correlation with intelligence and language was not significant.

A comparison of the self-concepts of ability of the EDUCATION and NO EDUCATION groups show no significant differences.

School Attendance During the Four-Year School Closure And Attitudes Toward the Prince Edward County Free Schools

Educational researchers have become increasingly concerned with the attitudes students hold toward their schools. Coster (1958), for example, attempted to ascertain the relationships between attitudes about school and income levels. Studying a sample of 878 pupils from nine Indiana high schools, Coster found that the three income groups responded similarly to attitudinal items on school, school personnel, school program, and the value of an education. The responses varied significantly with income level, however, on items relating to inter-personal relationships (i.e., social life, being liked by other pupils, opinions of other pupils, feelings of parental interest in school work, and personal interest of teachers). And, while all students responded uniformly on specific items pertaining to the school, they varied significantly according to income level in their general impression of their school. Finally, the income groups varied significantly in their estimates of being able to get the kinds of jobs they wanted after leaving school.

Arnez (1963) studied the attitudes of 380 culturally deprived Negro youth in a segregated high school in Baltimore, Maryland. The purpose of the study was to explore their attitudes toward the educational program. Analysis of responses to the "Illinois Inventory of Pupil Opinion" showed that 88 percent of the 380 pupils were either satisfied or partially satisfied with their school. Responses concerning students' attitudes toward the value of their studies indicated complacency. Forty-seven percent felt that they were getting less than they could from their studies. But a majority of the pupils felt that the cause of their low achievement lay in themselves rather than in their teachers or the educational program; 42 percent reported that their low achievement resulted from the lack of studying; 14 percent indicated that teachers did not give enough time to slow learners; and a substantial minority reported that (1) teachers did not give individual help, (2) not enough opportunities were offered for rapid learners, and (3) there was an over-abundance of school work given. Less that four percent stated that they were not interested in school work. Finally, when asked to indicate the most liked feature of their school, a majority of the pupils indicated the school staff. This latter attitude was further supported when only four percent of the pupils listed teachers as the most disliked feature of the school.

Greene (1962) compared certain measures of "school morale" among white and Negro high school pupils in a large southeastern school system. He reported, among other findings, that (1) a significantly higher proportion of white than Negro pupils expressed the wish to be better treated by teachers, whereas a higher proportion of the Negro than white pupils expressed the wish to do better school work; (2) white pupils were more likely than Negro pupils to be dissatisfied with the amount of work which they had to do to "keep up" in their studies; (3) Negro pupils reported significantly more favorable attitudes toward the usefulness in everyday living of their school work than did white pupils; and (4) Negro pupils reported significantly greater satisfaction than did white pupils with how much they were getting from their school work. Taken collectively, Greene interpreted his findings as indicating that either Negro pupils had a more bona fide adjustment to school work than did white pupils or that Negro pupils were less willing than white pupils to report unfavorable adjustment to school work.

In the present analysis, the relationship between specific attitudes toward the Prince Edward County Free Schools and prior school attendance outside the County during the four-year school closure was investigated. The specific question raised in this analysis was whether there was any relationship between prior schooling outside the County and attitudes toward the new school system.

It was thought that members of the EDUCATION group, particularly those who attended well-equipped, educationally superior, integrated schools in the North, might be less overwhelmed by the outstanding features of the Prince Edward County Free Schools, and, hence, be more objective in their attitudes. The NO EDUCATION group, on the other hand, lacked the broadening experience of having observed and participated in schools with features beyond the fundamental necessities (team teaching, arrangements for individualized programs, reading clinics, speech clinics, co-curricular activities scheduled into the school day, adequate guidance staff, and quick access to other special services) and would therefore be expected to express more favorable attitudes toward the Prince Edward County Free Schools.

Procedure

A questionnaire, containing an attitude toward school scale, was administered to approximately 225 pupils in the Prince Edward County Free School System. The attitude toward school scale, constructed as part of this study, contained eleven attitudinal items. The items pertained to school, school program of study, student morale, social acceptance, teachers, and extra-curricular activities. Each item in the scale was stated as a question and was followed by a list of five possible responses. The responses reflected: (1) a very favorable attitude, (2) a favorable attitude, (3) a neutral (neither favorable nor unfavorable) attitude, (4) an unfavorable attitude, and (5) a very unfavorable attitude. Following is an example of a typical item and list of responses:

Item: How do you feel about the school spirit at your school?

_____ a. It is very high.
_____ b. It is moderately high.
_____ c. It is neither high nor low.
_____ d. It is moderately low.
_____ e. It is very low.

Pupils were instructed to check the responses with which they agreed most closely.

A sample of 166 subjects, who participated in a previous study (Green, et al., 1964) (from whom, consequently, data on school attendance outside the County during the four-year school closure had been gathered) was randomly selected. The sample included 76 boys and 90 girls. Forty-three boys and 45 girls were of the EDUCATION group. Thirty-three boys and 45 girls were of the NO EDUCATION group. The subjects ranged between 11 and 20 years of age with a median age of 15.6.

Responses to each attitudinal item were tabulated by school attendance elsewhere during the school closure. The responses to the items were then dichotomized into two categories. One group included very favorable responses; and the second group included all other responses. For each item, the following null hypothesis was postulated and tested: There is no difference in the responses of the EDUCATION and NO EDUCATION groups. Each of the eleven hypotheses was tested by the chi-square technique.

Results and Discussion

The tests were based on a series of 2 X 2 contingency tables. The combinations of responses provided a uniform series of tables with a minimul expected frequency of well over ten in each cell.

The results of the chi-square tests are presented in Table 7-9. The table also shows the percentages of pupils, by school attendance outside Prince Edward County during the school closure, who indicated very favorable responses to the attitudinal items. The column headed "p" indicates the probability level associated with the chi-square values.

The items were divided into six groups to facilitate interpretation: (1) General attitudes toward the schools, (2) Attitudes toward the program of studies, (3) Attitudes related to student morale, (4) Attitudes related to social acceptance, (5) Attitudes related to teachers, and (6) Attitudes related to extracurricular activities. The letters are used to designate the items in Table 7-9.

The data show that responses varied significantly on relatively few items. Only two of the eleven null hypotheses could be rejected at the 5 percent level. The responses varied among the item groups widely, ranging from practically no variation to extremely significant variations. The significant variations were confined to two of the six groups: general attitudes toward the schools (Group A) and attitudes toward the program of studies (Group B).

Significant variation was noted for one of the two items in the general attitude toward the schools group (Group A). The NO EDUCATION group reacted more favorably in their general assessment of their schools than the EDUCATION group (A-1).

General attitudes toward the schools seemed to be related to attitudes toward the schools' program of studies. The NO EDUCATION group reacted significantly more favorably when asked: "In your opinion, how well does your school prepare students to be 'somebody,' one who can make important decisions?" (B-3), and "In

Table 7-9

Results of Tests of Significance
Showing Percentages of Pupils Checking Very Favorable Responses
By School Attendance Outside Prince Edward County During the School Closure

Item		EDUCATION N	NO EDUCATION N	Total N
A-1	How do you generally regard the school that you attend?	42	60*	51
A-2	How do you believe other students at your school regard it?	27	41	34
B-1	In your opinion, how well does your school prepare students in basic skills so they can get a fairly good job?	50	62	56
B-2	In your opinion, how well does your school prepare students to be curious about things, to understand what makes the world "click"?	43	51	47
B-3	In your opinion, how well does your school prepare students to be "somebody," one who can make important decisions?	48	63	55
B-4	In your opinion, how well does your school prepare students for college?	49	67*	57
B-5	How do you feel about the subjects available at your school?	43	44	43
C-1	How do you feel about the school spirit at your school?	37	50	43
D-1	In your opinion, how well does your school prepare students to be better able to win friends?	37	40	39
E-1	How do you feel about your experience with teachers at your school?	44	45	45
F-1	How do you feel about the extra-curricular activities provided at your school?	57	50	54

*$p < .05$

your opinion, how well does your school prepare students for college?" (B-4). The NO EDUCATION group responded more favorably than the EDUCATION group, but not significantly so, to questions pertaining to preparation in basic skills (B-1) and the stimulation of curiosity (B-2). The EDUCATION and NO EDUCATION groups were virtually in complete agreement in their attitudes toward the subjects available at their schools (B-5).

The two groups of pupils differed from each other--but not significantly--in their attitudes toward student morale at their schools, with the NO EDUCATION group tending to respond more favorably. There were, however, virtually no differences in responses between the EDUCATION and NO EDUCATION groups on items pertaining to social acceptance (D-1), teachers (E-1), and extra-curricular activities (F-1). Both groups held attitudes at the moderately high or very high end of the scale.

Conclusions

The data seem to support the following conclusions:

1. Responses of pupils of the EDUCATION and NO EDUCATION groups were more likely to vary on items that elicited general assessments of the schools and items that related to the value of their studies than on items which involved student morale, social acceptance, teachers, and extra-curricular activities.
2. While the Prince Edward County Free Schools succeeded in providing a program of studies that was uniformly accepted by pupils of the EDUCATION and NO EDUCATION groups, they were less successful in providing an educational program that was uniformly valued by the gwo groups.
3. Several attitudes of both groups were at the positive end of the scale.

Summary

When 166 Negro pupils from the Prince Edward County Free Schools were divided into EDUCATION and NO EDUCATION groups, it was found that they responded similarly to attitudinal items on student morale, social acceptance, teachers, and extra-curricular activities. Both groups were generally favorable in their attitudes toward the Prince Edward County Free Schools, with most pupils expressing either "moderately favorable" or "very favorable" attitudes. The two groups differed significantly, however, on an item that elicited general assessment of the schools and on an item that related to the value of the schools' program of studies. The NO EDUCATION group responded more favorably.

REFERENCES

Amos, William E., "A Study of the Occupational Awareness of a Selected Group of Ninth Grade Negro Students," Journal of Negro Education, 1960, 24, 500-503.

Arnez, Nancy L., "A Study of Attitudes of Negro Teachers and Pupils Toward Their School," Journal of Negro Education, 1963, 32, 289-293.

Bodwin, Raymond F., The Relationship Between Immature Self-Concept and Certain Educational Disabilities, unpublished Doctor's Thesis, Michigan State University, East Lansing, 1957.

Brookover, Wilbur B., "A Social Psychological Conception of Classroom Learning," School and Society, 1959, 87, 84-87.

Brookover, Wilbur B., and Gottlieb, David, "Social Class and Family Influences," in W. W. Charters and N. L. Gage (eds.), Readings in the Social Psychology of Education, Boston: Allyn and Bacon, Inc., 1963, 3-11.

Brookover, Wilbur B., Patterson, Ann, and Thomas, Shailer, Self-Concept of Ability and School Achievement; Cooperative Research Project No. 845, Department of Health, Education and Welfare, United States Office of Education, 1962.

Combs, Arthur W., and Snygg, Donald, Individual Behavior, revised edition, New York: McGraw-Hill Book Company, 1959.

Cooley, Charles H., Human Nature and the Social Order, New York: Charles Scribner's Sons, 1902.

Coster, John K., "Attitudes Toward School of High School Pupils from Three Income Levels," Journal of Educational Psychology, 1958, 49, 61-66.

Dewey, John, Human Nature and Conduct, New York: Modern Library, 1930.

Drabick, Lawrence W., "Student Aspirations in North Carolina Negro High Schools," Agricultural Education Magazine, 1965, 37, 258-261.

Duncan, Otis D., "A Socio-Economic Index for All Occupations," and "Properties and Characteristics of the Socio-Economic Index," in Albert J. Reiss, Jr., (ed.), Occupations and Social Status, Glencoe, Ill.: The Free Press, 1961, 109-161 and 263-275.

Green, Robert L., Hofmann, Louis J., Morse, Richard J., Hayes, Marilyn E., and Morgan, Robert F., The Educational Status of Children in a District Without Public Schools, Cooperative Research Project No. 2321, Department of Health, Education and Welfare, United States Office of Education, 1964.

Greene, James E., Sr., "A Comparison of the 'School Morale' of White and Negro Students in a Large Southeastern School System," Journal of Negro Education, 1962, 31, 132-138.

Mead, George H., Mind, Self and Society, Chicago: University of Chicago Press, 1934.

Morse, Richard J., Self-Concept of Ability, Significant Others and School Achievement of Eighth-Grade Students: A Comparative Investigation of Negro and Caucasian Students, unpublished Master's Thesis, Michigan State University, East Lansing, 1963.

Roth, R. M., "The Role of Self-Concept in Achievement," Journal of Experimental Education, 1959, 27, 265-281.

Siegel, Sidney, Nonparametric Statistics for the Behavioral Sciences, New York: McGraw-Hill Book Company, Inc., 1956.

Chapter VIII

CONCLUSIONS AND IMPLICATIONS

This study was a systematic attempt to analyze the effects of a critical incident, unheralded in American public education; specifically, the impact of one and one-half years of resumed formal schooling upon the educational status of the Negro children of Prince Edward County, Virginia. These children were denied an education for a four-year period due to the closing of the public schools in that county in order to avoid court-ordered school desegregation.

Intellectual and Achievement Assessment

The impact of resumed formal schooling upon the intellectual development of the school-deprived Negro children of Prince Edward County was the first major area of concern in this study. It was found that one and one-half years of resumed formal schooling after an extended period of educational deprivation brought about general improvement in measured intelligence.

However, only those children who were totally deprived of formal schooling during the period in which the schools were closed made significant gains in measured intelligence. Apparently in this case the reintroduction of formal schooling had the most dramatic effect on those who were most deprived. The 12 to 14 year old school children of the latter group made a total gain of 18 I.Q. points. Eighty-two percent of the subjects in the same group made improvements in measured intelligence. However, the EDUCATION group (those with intermittent schooling) yet excelled the NO EDUCATION group in measured intelligence at all age levels. At times the difference was as large as 29.5 I.Q. points. It is significant to note that most of the EDUCATION group, after one and one-half years of resumed formal schooling, were well within the average range of intelligence (excluding the 12 to 14 year old group which, incidentally, made the greatest intellectual gains). It was further found that both age and degree of educational deprivation appeared to be critical to measured improvement of intelligence with the latter being the most critical factor of the two. It should be further stressed that the measured intelligence of those children with even sporadic and very limited education excelled those who were completely deprived of education at all ages regardless of the measurement used to assess the difference.

Another significant aspect of the study was an assessment of achievement levels after resumed formal schooling. In general, after resumed schooling, there was a slight increase in measured achievement. The average achievement level of both the partially schooled and the completely school-deprived groups did not approximate national norms. However, the younger age groups were closer to national norms than their older counterparts. The large 1963 differences found in achievement between the EDUCATION and NO EDUCATION groups were yet apparent, suggesting that the interim schooling received by the EDUCATION group, although slight, had a positive effect in reading achievement. The EDUCATION group performed slightly above the NO EDUCATION group at all levels with both younger age groups exhibiting no reading lag.

Aspirations, Self-Concept, and Attitudes Toward School

A third analysis focused on the effects of severe school deprivation upon levels of educational and occupational aspirations. It was found that levels of educational and occupational aspiration are significantly related to schooling. The most important aspect of this finding was that the school-deprived group made the greatest positive change in aspirational levels suggesting that aspirational levels among disadvantaged groups are highly related to school experiences. The summer crash (educational) programs were not significantly related to changes in occupational and educational aspirations for either group.

The self-concept of ability as related to achievement was assessed. As in the 1964 Prince Edward County study, it was found that one's perception of self, even with I.Q. controlled, is significantly related to educational achievement.

Of further interest in this study were the attitudes of the students toward their resumed schooling. Both the EDUCATION and NO EDUCATION groups expressed favorable attitudes toward their renewed school experiences. Many indicated that the resumption of schooling was a very significant aspect of their lives. This finding supported an earlier assumption that the closing of the schools had a traumatic effect not only within the Negro adult population but within the student population as well.

Finally, the educational increments during the year in which the private school (Prince Edward County Free School Association) was in operation were higher than during the subsequent year in which the public schools were in session. This latter finding might have been a function of the amount of funds, staff, and facilities which were available during the Free School operation. Furthermore, the general excitement, motivation, and interest centered around the reopening of the schools might have added to this finding. Most descriptions of the behavior of these children during the first school year suggested a high level of school involvement.

In summary, the closing of the public schools in Prince Edward County, Virginia, can be looked upon as one of the most tragic events in the annals of American education. This event had a debilitating effect upon the intelligence and achievement for both the school and school-deprived groups. However, the improvement in educational skills did not accommodate the extreme deficits brought about by educational deprivation. Yet, even those with limited education far excelled those (in most areas of achievement) who were totally deprived. The general question of whether extreme school deprivation (as in this case) may have irreversible effects upon achievement and intelligence remains unanswered. Only a longitudinal study with such a school-deprived population could speak to this question. However, the abundance of resources and interest focused on the educational plight of the Prince Edward County children during the first year in which schooling was resumed suggests that educational deficiencies among disadvantaged groups can possibly be reversed if sufficient resources, curriculum innovations, and competent teaching is obtained. In most poor communities, such efforts are costly and cannot be accommodated by the community alone. This suggests that Federal education programs should be heavily invested in communities with large segments of disadvantaged youth. This is particularly true of Prince Edward County, Virginia.

APPENDIX A

Self-Concept of Ability Test

SELF-CONCEPT OF ABILITY--GENERAL
(FORM A)
Michigan State University
Bureau of Educational Research

Circle the letter in front of the statement which best answers each question.

1. How do you rate yourself in school ability compared with your close friends?

   a. I am the best.
   b. I am above average.
   c. I am average.
   d. I am below average.
   e. I am the poorest.

2. How do you rate yourself in school ability compared with those in your class at school?

   a. I am among the best.
   b. I am above average.
   c. I am average.
   d. I am below average.
   e. I am among the poorest.

3. Where do you think you would rank in your class in high school?

   a. among the best
   b. above average
   c. average
   d. below average
   e. among the poorest

4. Do you think you have the ability to complete college?

   a. yes, definitely
   b. yes, probably
   c. not sure either way
   d. probably not
   e. no

5. Where do you think you would rank in your class in college?

   a. among the best
   b. above average
   c. average
   d. below average
   e. among the poorest

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6. In order to become a doctor, lawyer, or university professor, work beyond four years of college is necessary. How likely do you think it is that you could complete such advanced work?

   a. very likely
   b. somewhat likely
   c. not sure either way
   d. unlikely
   e. most unlikely

7. Forget for a moment how others grade your work. In your own opinion, how good do you think your work is?

   a. My work is excellent.
   b. My work is good.
   c. My work is average.
   d. My work is below average.
   e. My work is much below average.

8. What kind of grades do you think you are capable of getting?

   a. mostly A's
   b. mostly B's
   c. mostly C's
   d. mostly D's
   e. mostly E's

APPENDIX B

Student Questionnaire

Dear Student:

This survey is an attempt to get a better picture of the problems you young people face in planning for your future education and occupation, and the attitudes you have toward these problems. By carefully filling out this questionnaire you will help us to gain a better understanding of how these problems look from where you stand.

PLEASE FOLLOW THE DIRECTIONS:

1. Read each item carefully. Answer to the best of your knowledge.

2. Be sure to answer each question. Where there are brackets, fill in an "X". Be sure that your "X" is squarely in the proper bracket, before your choice. Where only a space is left, enter the word, phrase, or figures called for. If you cannot answer the question, write "I do not know."

3. There are several questions which refer to your parents. If for any reason you are not living with your parents, answer for the person who acts as your parent or guardian.

4. If you have any comment to make, if you did not understand any item, if your attitudes differ from those given, or if you have problems which we failed to mention, write about them on the margin close to the items near them in meaning.

Part I. ABOUT MYSELF

1. MY NAME IS: ____.

2. MY SEX IS: ( ) male ( ) female.

3. THE DATE OF MY BIRTH WAS: ______________________________________.
(Month) (Day) (Year)

4. MY ADDRESS IS: ____.

5. THE NAME OF THE DISTRICT IN WHICH I LIVE IS:

( ) Prospect.
( ) Locketts.
( ) Leigh.
( ) Buffalo.
( ) Hampden Sydney.
( ) Farmville, but not town.
( ) Town of Farmville.

6. I MAKE MY REGULAR HOME WITH:

( ) my own parents.
( ) a parent and a step-parent.
( ) one parent only.
( ) my grandparents.
( ) an uncle and/or aunt.
( ) other (please specify) ______________________________.

7. THE NAME OF THE ADULT HEAD OF THE HOUSEHOLD IN WHICH I LIVE IS:

____.

8. THE OCCUPATION OF THE ADULT HEAD OF THE HOUSEHOLD IN WHICH I LIVE IS:

(Please give a good description of the occupation, job title if possible, not just the company for which he or she works.)

____

____.

9. I WOULD SAY MY FAMILY AND I BELONG TO THE:

( ) lower class. ( ) middle class.

( ) working class. ( ) upper class.

10. I AM IN THE ______________ GRADE.

11. AS TO WORKING WHILE I AM IN SCHOOL:

( ) I have a fairly regular job outside my family and home.

( ) I sometimes work outside my family and home.

( ) I do not work outside my family and home.

12. THE KINDS OF EXTRA-CURRICULAR ACTIVITIES IN WHICH I PARTICIPATE ARE:

(Check the ones in which you participate regularly, and add to the list if necessary.)

( ) athletics.

( ) band-orchestra.

( ) chorus-vocal.

( ) dramatics.

( ) 4-H, NHA, or NFA.

( ) debates.

( ) school paper.

( ) school annual.

( ) student government.

( ) hobby club.

( ) other ______________________.

______________________.

______________________.

______________________.

13. I FEEL THAT EDUCATION IS:

( ) very important.

( ) important.

( ) neutral or cannot say.

( ) not particularly important.

( ) does not matter to me at all.

Part II

THIS SET OF QUESTIONS CONCERNS YOUR PLANS AND WISHES REGARDING OCCUPATIONS AND EDUCATION. THERE ARE FIVE QUESTIONS. READ AND ANSWER EACH QUESTION CAREFULLY. SEVERAL QUESTIONS ASK YOU TO INDICATE SPECIFIC JOB CHOICES. IN THOSE CASES GIVE A GOOD DESCRIPTION OF EACH JOB, JOB TITLES WHENEVER POSSIBLE.

1. What occupations have you thought about going into?

   A. ______________________________.

   B. ______________________________.

   C. ______________________________.

   D. ______________________________.

2. If you were absolutely free to go into any kind of work you wanted, what kind of job would you most like to have?

   ____

   ____

   ______________________________.

3. Sometimes what one would like to do is not exactly what he must plan to do. What kind of job are you pretty sure you will be able and plan to get?

   ____

   ____

   ______________________________.

4. If you were absolutely free to go as far in school as you wanted, how far would you like to go?

   (   ) less than high school.

   (   ) high school graduation.

   (   ) high school plus special training (e.g., trade school).

   (   ) some college but not college graduation.

   (   ) college graduation.

   (   ) beyond college (graduate or professional school).

5. Sometimes what one would like to do is not exactly what he must plan to do. How far in school are you pretty sure you will be able and plan to go?

( ) less than high school.

( ) high school graduation.

( ) high school plus special training (e.g., trade school).

( ) some college but not college graduation.

( ) college graduation.

( ) beyond college (graduate or professional school).

Part III

THIS SET OF QUESTIONS CONCERNS YOUR INTEREST IN DIFFERENT KINDS OF JOBS. THERE ARE EIGHT QUESTIONS. EACH ONE ASKS YOU TO CHOOSE ONE JOB OUT OF TEN PRESENTED. READ EACH QUESTION CAREFULLY. THEY ARE ALL DIFFERENT. ANSWER EACH ONE THE BEST YOU CAN. DO NOT OMIT ANY.

1. Of the jobs listed in this question, which is the BEST ONE you are REALLY SURE YOU CAN GET when your SCHOOLING IS OVER?

1.1 (   ) Lawyer
1.2 (   ) Welfare worker for a city government
1.3 (   ) United States representative in Congress
1.4 (   ) Corporal in the Army
1.5 (   ) United States Supreme Court Justice
1.6 (   ) Night watchman
1.7 (   ) Sociologist
1.8 (   ) Policeman
1.9 (   ) County agricultural agent
1.10 (   ) Filling station attendant

2. Of the jobs listed in this question, which ONE would you choose if you were FREE TO CHOOSE ANY of them you wished when your SCHOOLING IS OVER?

2.1 (   ) Member of the board of directors of a large corporation
2.2 (   ) Undertaker
2.3 (   ) Banker
2.4 (   ) Machine operator in a factory
2.5 (   ) Physician (doctor)
2.6 (   ) Clothes presser in a laundry
2.7 (   ) Accountant for a large business
2.8 (   ) Railroad conductor
2.9 (   ) Railroad engineer
2.10 (   ) Singer in a night club

3. Of the jobs listed in this question, which is the BEST ONE you are REALLY SURE YOU CAN GET when your SCHOOLING IS OVER?

3.1 (   ) Nuclear physicist
3.2 (   ) Reporter for a daily newspaper
3.3 (   ) County judge
3.4 (   ) Barber
3.5 (   ) State governor
3.6 (   ) Soda fountain clerk
3.7 (   ) Biologist
3.8 (   ) Mail carrier
3.9 (   ) Official of an international labor union
3.10 (   ) Farm hand

4. Of the jobs listed in this question, which ONE would you choose if you were FREE TO CHOOSE ANY of them you wished when your SCHOOLING IS OVER?

4.1 ( ) Psychologist
4.2 ( ) Manager of a small store in a city
4.3 ( ) Head of a department in state government
4.4 ( ) Clerk in a store
4.5 ( ) Cabinet member in the federal government
4.6 ( ) Janitor
4.7 ( ) Musician in a symphony orchestra
4.8 ( ) Carpenter
4.9 ( ) Radio announcer
4.10 ( ) Coal miner

5. Of the jobs listed in this question, which is the BEST ONE you are REALLY SURE YOU CAN HAVE by the time you are 30 YEARS OLD?

5.1 ( ) Civil engineer
5.2 ( ) Bookkeeper
5.3 ( ) Minister or priest
5.4 ( ) Streetcar motorman or city bus driver
5.5 ( ) Diplomat in the United States Foreign Service
5.6 ( ) Sharecropper (one who owns no livestock or farm machinery, and does not manage the farm)
5.7 ( ) Author of novels
5.8 ( ) Plumber
5.9 ( ) Newspaper columnist
5.10 ( ) Taxi driver

6. Of the jobs listed in this question, which ONE would you choose to have when you are 30 YEARS OLD, if you were FREE TO HAVE ANY of them you wished?

6.1 ( ) Airline pilot
6.2 ( ) Insurance agent
6.3 ( ) Architect
6.4 ( ) Milk route man
6.5 ( ) Mayor of a large city
6.6 ( ) Garbage collector
6.7 ( ) Captain in the Army
6.8 ( ) Garage mechanic
6.9 ( ) Owner-operator of a printing shop
6.10 ( ) Railroad section hand

7. Of the jobs listed in this question, which is the BEST ONE you are REALLY SURE YOU CAN HAVE by the time you are 30 YEARS OLD?

   7.1 ( ) Artist who paints pictures that are exhibited in galleries
   7.2 ( ) Traveling salesman for a wholesale concern
   7.3 ( ) Chemist
   7.4 ( ) Truck driver
   7.5 ( ) College professor
   7.6 ( ) Street sweeper
   7.7 ( ) Building contractor
   7.8 ( ) Local official of a labor union
   7.9 ( ) Electrician
   7.10 ( ) Restaurant waiter

8. Of the jobs listed in this question, which ONE would you choose to have when you are 30 YEARS OLD, if you were FREE TO HAVE ANY of them you wished?

   8.1 ( ) Owner of a factory that employs about 100 people
   8.2 ( ) Playground director
   8.3 ( ) Dentist
   8.4 ( ) Lumberjack
   8.5 ( ) Scientist
   8.6 ( ) Shoeshiner
   8.7 ( ) Public school teacher
   8.8 ( ) Owner-operator of a lunch stand
   8.9 ( ) Trained machinist
   8.10 ( ) Dock worker

Part IV

THE FOLLOWING EIGHT QUESTION CONCERN YOUR PERSONAL FEELINGS ABOUT YOUR SCHOOL ABILITY. YOU ARE TO SELECT THE ONE ANSWER FOR EACH QUESTION THAT BEST EXPRESSES YOUR FEELINGS. DO NOT OMIT ANY.

1. How do you rate yourself in school ability compared with your close friends?

(   ) I am the best.
(   ) I am above average.
(   ) I am average.
(   ) I am below average.
(   ) I am the poorest.

2. How do you rate yourself in school ability compared with those in your class at school?

(   ) I am among the best.
(   ) I am above average.
(   ) I am average.
(   ) I am below average.
(   ) I am among the poorest.

3. Where do you think you would rank in your class in high school?

(   ) among the best
(   ) above average
(   ) average
(   ) below average
(   ) among the poorest

4. Do you think you have the ability to complete college?

(   ) yes, definitely
(   ) yes, probably
(   ) not sure either way
(   ) probably not
(   ) no

5. Where do you think you would rank in your class in college?

(   ) among the best
(   ) above average
(   ) average
(   ) below average
(   ) among the poorest

6. In order to become a doctor, lawyer, or university professor, work beyond four years of college is necessary. How likely do you think it is that you could complete such advanced work?

(   ) very likely
(   ) somewhat likely
(   ) not sure either way
(   ) unlikely
(   ) most unlikely

7. Forget for a moment how others grade your work. In your own opinion, how good do you think your work is?

(   ) My work is excellent.
(   ) My work is good.
(   ) My work is average.
(   ) My work is below average.
(   ) My work is much below average.

8. What kind of grades do you think you are capable of getting?

(   ) mostly A's
(   ) mostly B's
(   ) mostly C's
(   ) mostly D's
(   ) mostly E's

Part V

WE WOULD LIKE TO KNOW SOMETHING ABOUT THE PEOPLE WHO ARE IMPORTANT TO YOU.

THERE ARE FIVE QUESTIONS. PLEASE READ AND ANSWER EACH QUESTION CAREFULLY.

1. What is the name of one person whom you admire most?

   Name: ____________________

   A. Who is this person? (Please check one of these, and give his occupation where this is asked.)

      1. Parent ________
      2. Other relative ________ Occupation ____________________
      3. Older friend ________ Occupation ____________________
      4. A friend of your own age ________
      5. Teacher ________
      6. Other ________ Occupation ____________________

2. Looking forward to the time when you have completed your education, whom do you know that you would want most to be like then?

   Name: ____________________

   A. Who is this person? (Please check one of these, and give his occupation where this is asked.)

      1. Parent ________
      2. Other relative ________ Occupation ____________________
      3. Older friend ________ Occupation ____________________
      4. A friend of your own age ________
      5. Teacher ________
      6. Other ________ Occupation ____________________

3. Looking forward to the time when you will be earning your own living, whom do you know that you would want most to be like then?

Name: ____

A. Who is this person? (Please check one of these, and give his occupation where this is asked.)

1. Parent ________
2. Other relative ________ Occupation ________________________________
3. Older friend __________ Occupation ________________________________
4. A friend of your own age ________
5. Teacher ________
6. Other ________ Occupation ________________________________

4. Looking forward to the time when you will have children of your own, whom do you know that you would want most to be like then, as a parent?

Name: ____

A. Who is this person? (Please check one of these, and give his occupation where this is asked.)

1. Parent ________
2. Other relative ________ Occupation ________________________________
3. Older friend __________ Occupation ________________________________
4. A friend of your own age ________
5. Teacher ________
6. Other ________ Occupation ________________________________

5. There are many people who are concerned about how well young people do in school. In the space below, write the name of ONE person whom you feel is concerned about how well you do in school.

Name: ________________________________

A. Who is this person? (Please check one of these, and give his occupation where this is asked.)

1. Parent ________
2. Other relative ________ Occupation ________________________
3. Older friend ________ Occupation ________________________
4. A friend of your own age ________
5. Teacher ________
6. Other ________ Occupation ________________________

Part VI

THIS SET OF QUESTIONS CONCERNS THE SCHOOL YOU ATTEND. THERE ARE ELEVEN QUESTIONS. YOU ARE TO SELECT THE ONE ANSWER FOR EACH QUESTION THAT BEST EXPRESSES YOUR FEELINGS TOWARD YOUR SCHOOL. READ EACH QUESTION CAREFULLY. ANSWER EACH ONE THE BEST YOU CAN. DO NOT OMIT ANY.

1. How do you generally regard the school that you attend?

( ) Excellent
( ) Good
( ) Fair
( ) Poor
( ) Very poor

2. How do you believe other students at your school regard it?

( ) Excellent
( ) Good
( ) Fair
( ) Poor
( ) Very poor

3. How do you feel about the school spirit at your school?

( ) It is very high.
( ) It is moderately high.
( ) It is neither high nor low.
( ) It is moderately low.
( ) It is very low.

4. In your opinion, how well does your school prepare students in basic skills so they can get a fairly good job?

( ) Very well
( ) Well
( ) So-so
( ) Poorly
( ) Very poorly

5. In your opinion, how well does your school prepare students to be curious about things, to understand what makes the world "click"?

( ) Very well
( ) Well
( ) So-so
( ) Poorly
( ) Very poorly

6. In your opinion, how well does your school prepare students to be better able to win friends?

( ) Very well
( ) Well
( ) So-so
( ) Poorly
( ) Very poorly

7. In your opinion, how well does your school prepare students to be "somebody"-- one who can make important decisions?

( ) Very well
( ) Well
( ) So-so
( ) Poorly
( ) Very poorly

8. In your opinion, how well does your school prepare students for college?

( ) Very well
( ) Well
( ) So-so
( ) Poorly
( ) Very poorly

9. How do you feel about your experience with teachers at your school?

( ) Very good
( ) Good
( ) Fair
( ) Poor
( ) Very poor

10. How do you feel about the subjects available at your school?

( ) Very much satisfied
( ) Satisfied
( ) So-so
( ) Dissatisfied
( ) Very much dissatisfied

11. How do you feel about the extra-curricular activities provided at your school?

( ) Very much satisfied
( ) Satisfied
( ) So-so
( ) Dissatisfied
( ) Very much dissatisfied

(Please GO BACK AND CHECK to see if you have ANSWERED EVERY QUESTION.)
Thank you